Arizona Medicine

Journal of

ARIZONA STATE MEDICAL ASSOCIATION

XUM

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Much confusion has resulted in the public's mind because of the conditions prevailing in the food field. Lessened food availability, the need of many people to economize, and the desire to cooperate with the government's aim toward world-relief, may well lead to deterioration of the nutritional state, unless competent guidance is offered.

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ARIZONA MEDICINE

JANUARY, 1948 Vol. 5, No. 1
Published bi-monthly by Arizona Medical Association at 142 South Central Avenue, Phoenix, Arizona. Subscription $1.50 per year; single copy 25 cents. Entered as second class matter March 1, 1921, at Postoffice at Phoenix, Arizona, act of March 3, 1879.

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60
Proc. Soc. Exp. Biol. and Med., 1934, 32, 241
N. Y. State Journ. Med., Vol. 35, 6-1-35, No. 11, 590-592.

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*Clements, F. W.: Rickets in Infants under One Year. The Incidence in an Australian Community and a Consideration of the Etiological Factors, Med. J. Australia, 1:336 (1942).

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1. Nutting, R. E.: Minn. Med., 26:1039-1044 (Dec.) 1943
2. Kugelmass, I. N.: Newer Nutrition in Pediatric Practice, p. 653, Lippincott, Phil., 1940.

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Impairment of physical and mental activity is often the lot of the menopausal woman, beset as she is with distressing somatic and emotional symptoms.

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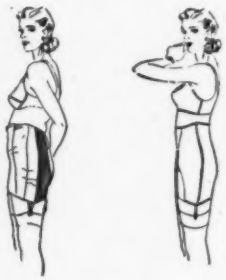

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*R. H. Follis, D. Jackson, M. M. Eliot, and E. A. Park: Prevalence of rickets in children between two and fourteen years of age, Am. J. Dis. Child. 66:1-11, July 1943.

MEAD'S Oleum Percomorphum With Other Fish-Liver Oils and Viosterol is a potent source of vitamins A and D, which is well taken by older children because it can be given in small dosage or capsule form. This ease of administration favors continued year-round use, including periods of illness.

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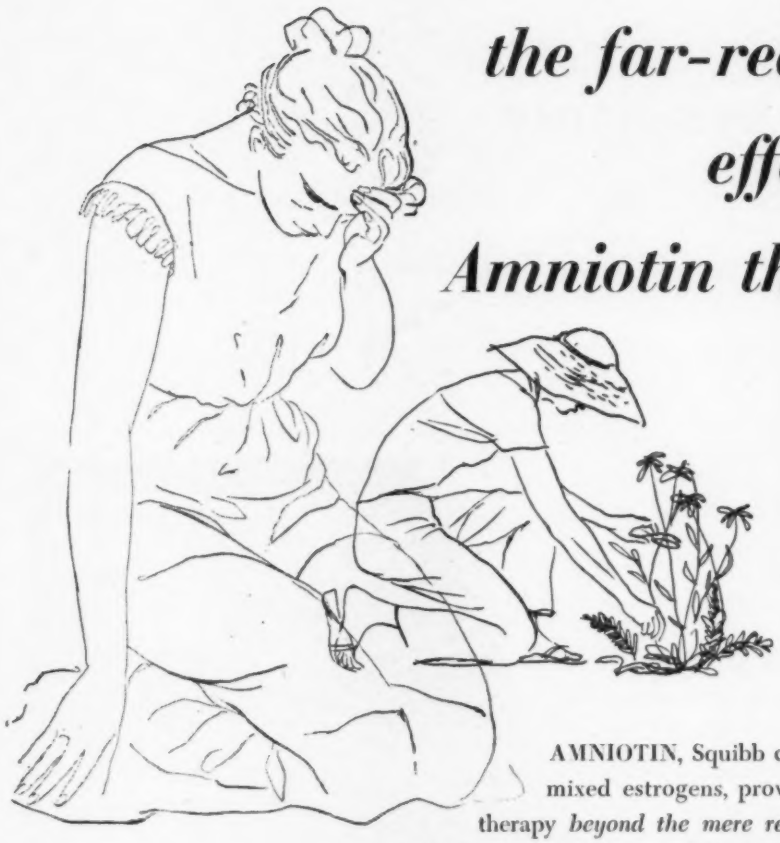

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1. J. Clin. Endo. 3:89 (Feb.) 1943.

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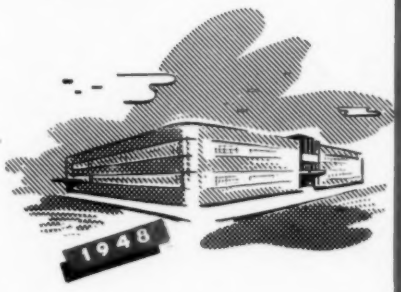

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*Vital Statistics—Special Reports: Vol. 25, No. 12, National Office of Vital Statistics, Washington, D. C. (Oct. 15) 1946, p. 206.

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Who's the villain in the Dip-Pert-Tet case—and when can you get plenty? How research multiplies the blood fractions. Why "old maids" make safer intravenous solutions. All this and more starting next month in the first episode of "Tales and Details" from

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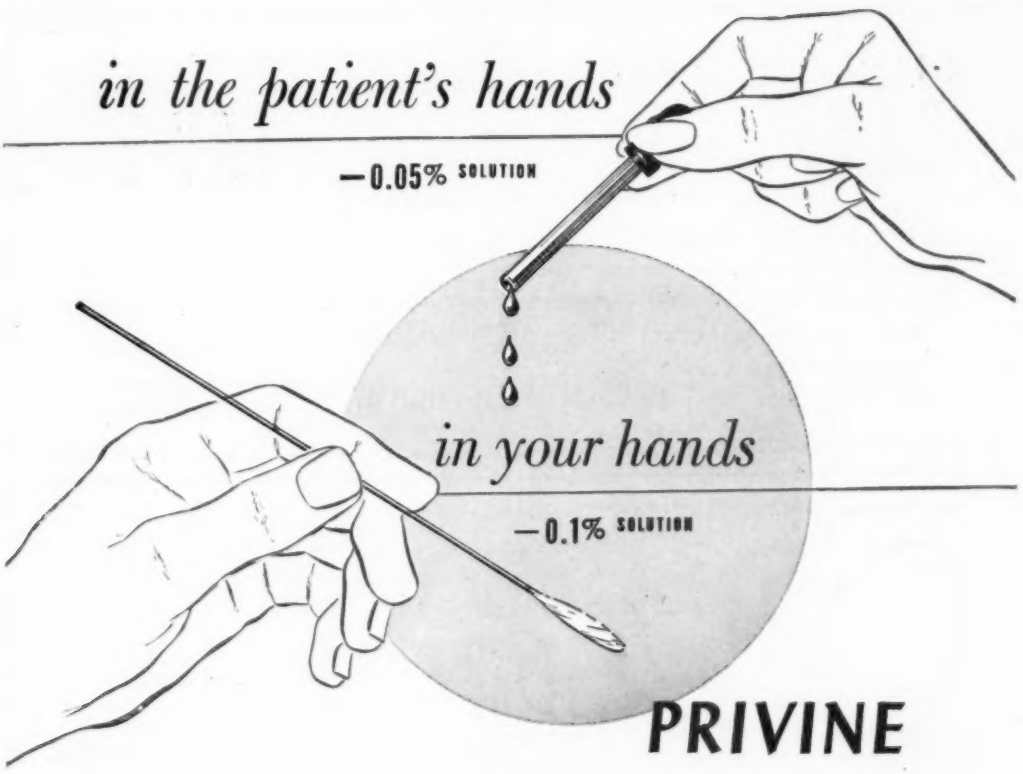

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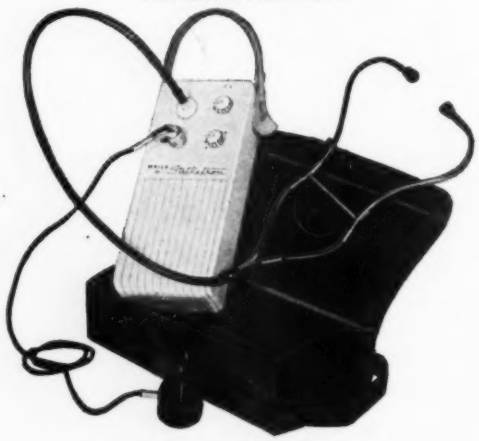

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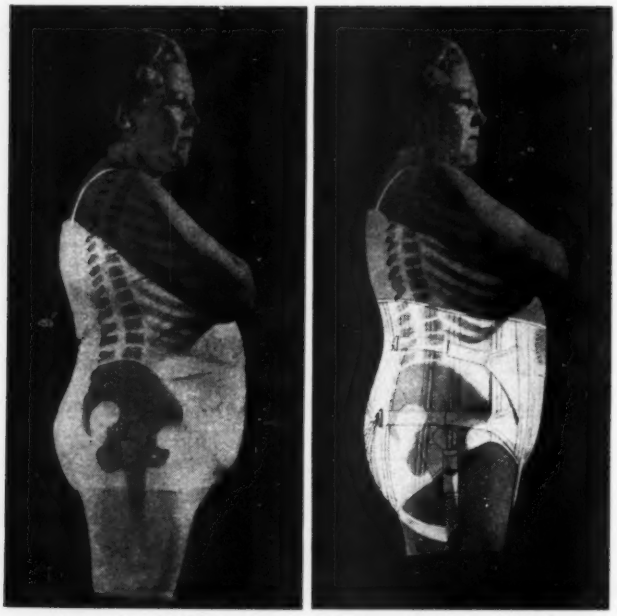
This new quick-reference chart gives essential data on the clinical uses, storage, preparation of solutions, administration, and dosage of Streptomycin Merck (Calcium Chloride Complex). It will be mailed to you on request. Write to Merck & Co., Inc., Rahway, N. J.

EXCELLENT SUPPORT for the

PENDULOUS ABDOMEN



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Same patient after application of support (skeleton indrawn).

CAMP

Clinicians are calling attention to the ill effects of the pendulous abdomen more frequently than formerly.

Research discloses that the increased weight of the abdomen, carrying the center of gravity forward, puts strain on muscles of back and feet; that ultimately round shoulders and increased cervical and lumbar curves develop; that the diaphragm and abdominal viscera lie on a lower plane than normally; that eventually respiratory and circulatory symptoms appear.

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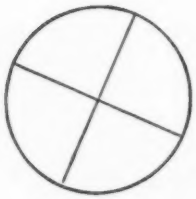

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[1]Harris, S. C.; Ivy, A. C., and Searle, L. M.: THE MECHANISM OF AMPHETAMINE-INDUCED LOSS OF WEIGHT: A Consideration of the Theory of Hunger and Appetite, J.A.M.A. 134:1468 (Aug. 23) 1947.

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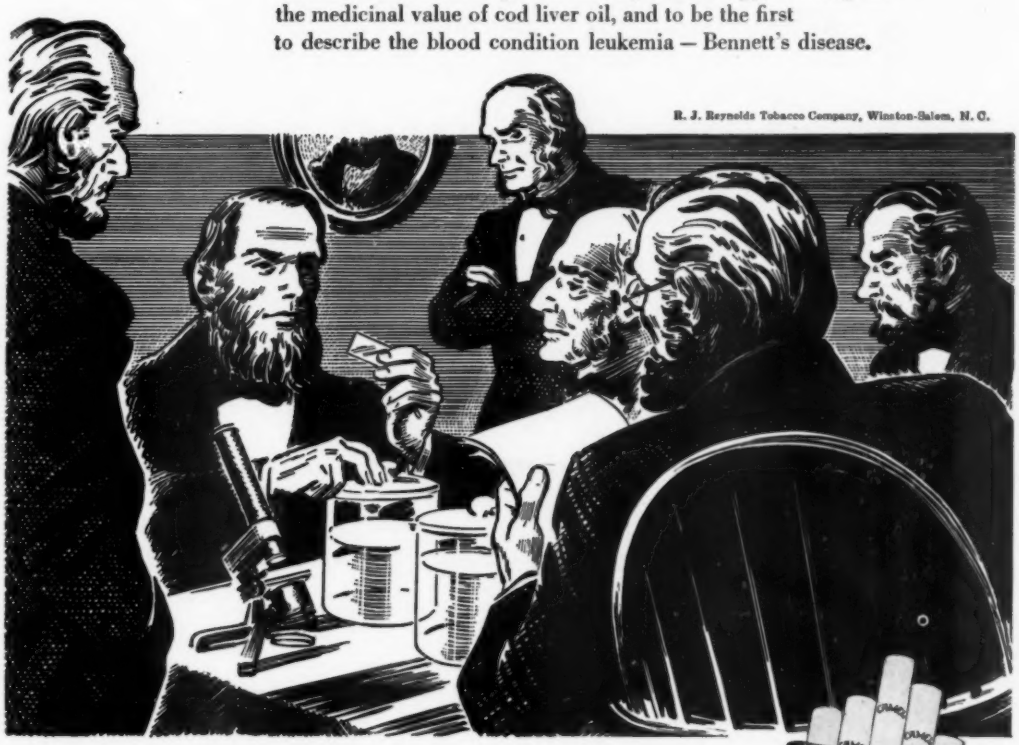

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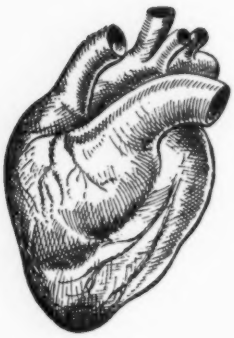

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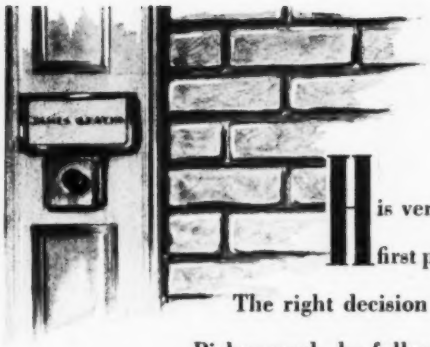

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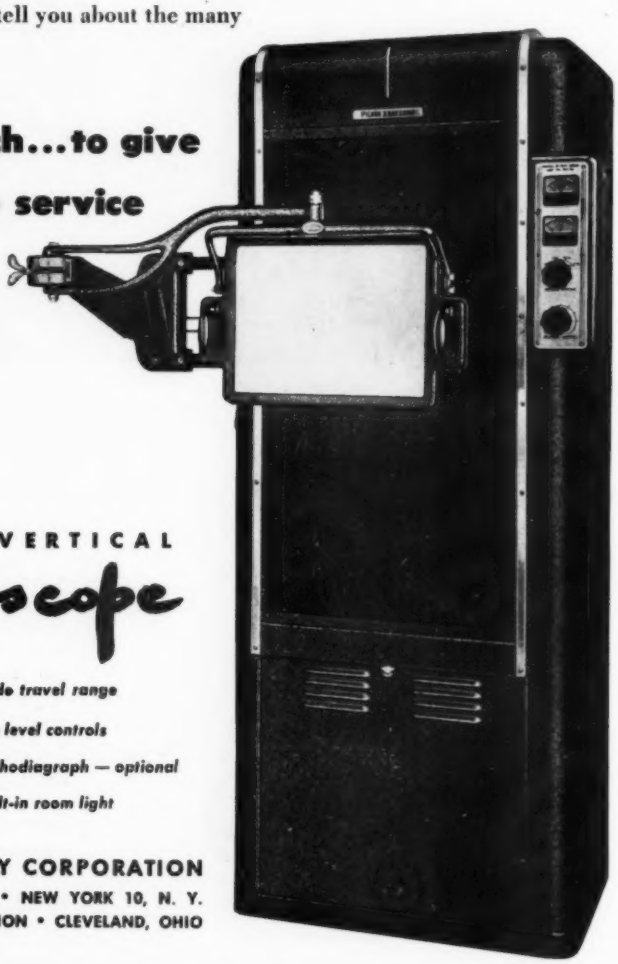

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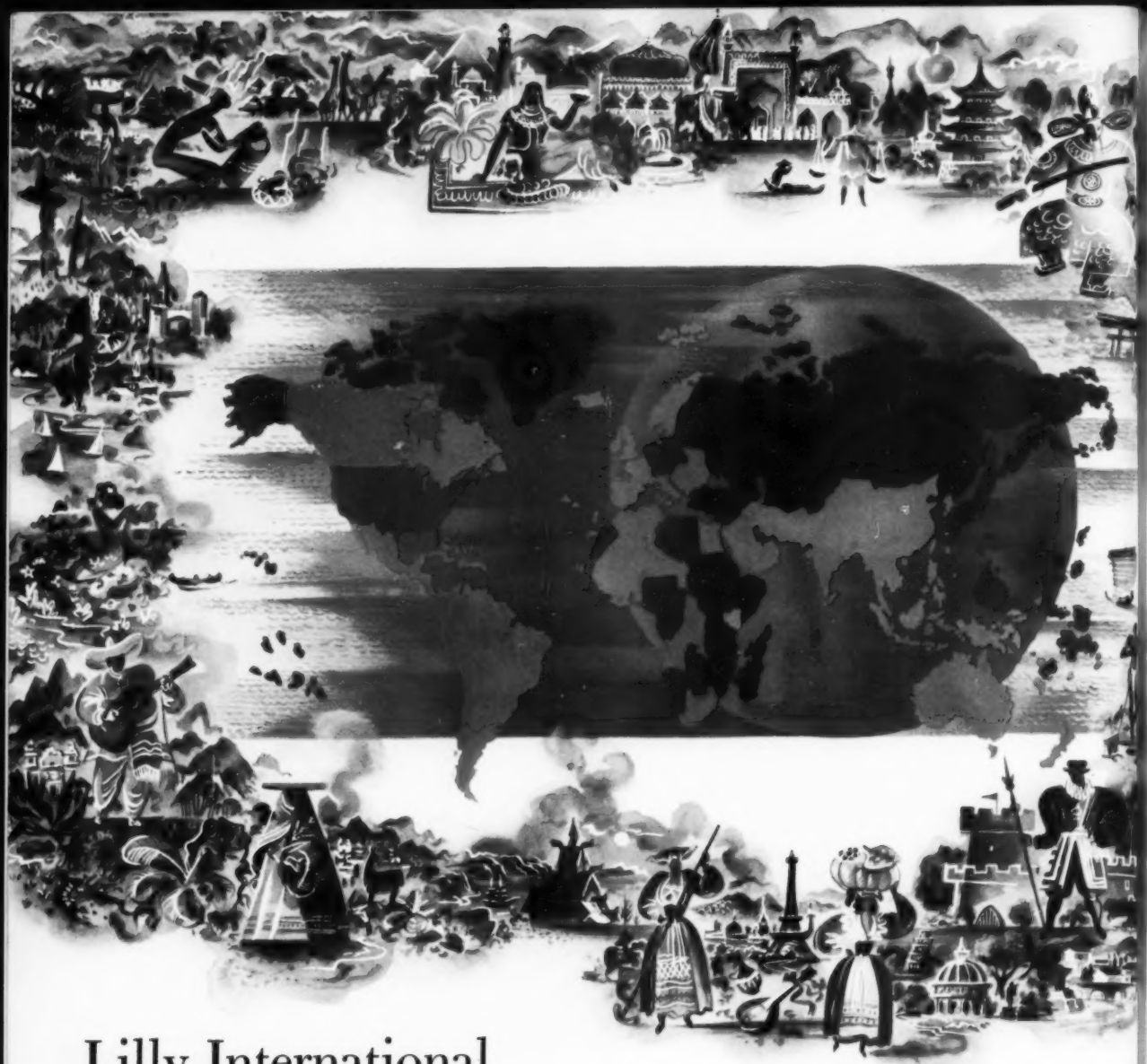

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ARIZONA MEDICINE
Journal of
ARIZONA STATE MEDICAL ASSOCIATION
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VIRUS PNEUMONIA

W. BERNARD YEGGE, M.D., F.A.C.P., F.A.C.C.P.* **
Denver, Colorado

SINCE the introduction of the sulfonamide drugs and penicillin there has been an increasing number of acute respiratory infections with atypical pulmonary lesions, in which the common pathogenic bacteria do not seem to play an etiological roll. The term "Virus Pneumonia"[1, 2, 3, 4] has been applied to this group of cases, and more recently they have been classified as atypical pneumonia with leukopenia. Pulmonary complications of several types of rickettsia, tularemia, brucellosis and the mycosis are often called atypical pneumonia but should not be classified as virus pneumonia.[5, 6, 7] If one is to speak of virus pneumonia, the conditions other than those having a true virus etiology would necessarily be excluded, but inasmuch as these conditions are very similar they will be mentioned at times throughout this discussion.

It would appear from statistics that virus and other atypical pneumonias have greatly increased during the last few years, but it is our opinion that this is not so. The attention to these conditions has been increased due to the fact that they do not respond to the new specific treatments of ordinary pneumonias of bacterial etiology. In former years these cases were probably not recognized and classified as bronchial pneumonia. If we should discuss only virus pneumonia, the etiological agent would necessarily be limited to the virus of influenza, psittacosis, ornithosis, lymphocytic choriomeningitis, lymphgranuloma venereum, trachoma and other unidentified filtrable viruses. It must be remembered, however, that in cases of virus pneumonia there is a question whether or not the pulmonary lesions are not also modified by other pathological bacteria, and thus confuse the picture.

INFLUENZAL PNEUMONIA

Influenzal pneumonia was a devastating disease during the pandemics of 1890, 1918, 1936 and 1937 as well as 1940 and 1941. During some of the earlier epipdemics the influenza bacillus of Pfeiffer was found to be the predominate organism in the lungs of fatal cases. However, it is now generally accepted that some filtrable virus similar to that originally demonstrated by Smith, Andrewes and Laidlay,[8] and later by Francis[9] were probably the causative agents in most cases of influenzal pneumonia. This virus has been called Influenza "A"[10] and in some of the later outbreaks another virus called Influenza "B"[11, 12, 13] was found to be present. There is sufficient evidence that possibly a third, and other types of viruses are etiologic factors. Influenzal pneumonia should be regarded as a complication of primary influenza, although in certain cases, the disease is pneumonic from the onset and is often fatal within a few days, before an invasion of secondary organisms takes place. This condition is very alarming, because these patients show, almost immediately, great respiratory distress and cyanosis, may rapidly develop hemorrhagic edema of the lungs, and die within 24-48 hours. This form is luckily not very common. The most common form is that in which the primary influenza with fever, cough, malaise, headache, aching and temperature exist for several days before signs of lung involvement begin to appear. In these cases the lung involvement is usually bilateral, fine or medium coarse rales being heard during the late inspiratory phase of respiration. One very characteristic finding is the changing of the areas of in-

* From the Department of Medicine, University of Colorado School of Medicine and Hospitals.

** Read before the Arizona Chapter of the American College of Chest Physicians, May 6, 1947.

volvement in the lung. One patch may clear up and within 24 hours another area may become involved. These areas are usually preceded by small patches of atelectasis, a feature which will later be emphasized. Pleurisy, with subsequent formation of fluid, is very commonly encountered and formation of abscesses due to failure of resolution are frequently found and greatly prolong the period of convalescence.

In many cases, areas of pneumonia are isolated and so deep seated that in spite of the severity of the condition, typical signs do not appear until comparatively late. Cyanosis is usually a prominent feature. Although the temperature may reach as high as 105 degrees the pulse is relatively slow except in the last 36 hours in fatal cases.

Sputum: The character of the sputum varies. It may be scanty, bloody mucoid, or profuse, salmon pink or a yellowish green. The yellowish green type is usually associated with extensive bronchiolitis or bronchiectasis.

Laboratory Findings: The leukopenia of primary influenza usually continues throughout the course of pneumonia; however, in cases in which pathogenic bacteria are present as secondary invaders the white count may be slightly elevated. In the rapid and severe cases a relative polycythemia may develop. Blood cultures are rarely positive except in terminal cases. The most serious feature of the disease is toxemia and the anoxemia.

Roentgenological Findings: Frequently the first evidence of pulmonary involvement is revealed by X-ray films of the chest and more extensive pulmonary involvement is shown than is elicited by physical examination. The first change usually noticed is an increase in the size of one or both of the hilar shadows which is followed by an infiltration, extending outward from the hilum toward the periphery of the lung. These are often of a fan or wedge shape and fade out into the normal lung parenchyma. The radiologic picture varies. There may be multiple small areas of soft infiltration that increase in size and become regularly confluent. These areas may clear during the course of the disease and other similar lesions appear elsewhere in the lung, starting as small areas of atelectasis.

It is only rarely that the density of the pulmonary consolidation conforms to the shape of a lobe characteristic of lobar pneumonia. X-ray signs are slower in disappearing from the lungs than in other pneumonias. Infiltration extending outward from the hilum and involvement of an upper lobe may make one suspicious of a tuberculous lesion, but the rapidity with which these X-ray findings change is of value in excluding a chronic pulmonary disease.

It should be remembered that a diagnosis of influenzal pneumonia cannot be made on the basis of X-ray evidence alone and one must rely on the history, clinical findings, and the laboratory for a diagnosis.

Complications: As stated before various bacterial infections may be superimposed upon an influenzal pneumonia giving rise to many complications. The usual duration of influenzal pneumonia is from one to three weeks but time of recovery may be greatly prolonged. When the patient is suffering from some other debilitating disease such as diabetes, the problem becomes more complicated. The following case illustrates such a condition.

Case #1, S. E. C. 4316: Female, age 57 who had been previously under my care for diabetes and had been taking 25 units of protamine insulin daily, was entered into St. Joseph's Hospital on August 12, 1946 with a temperature of 103, pulse 110. She had previously been under her family physician at Leadville, Colorado with a temperature of 101-103 degrees for one week. She had been given about 2,000,000 units of penicillin with no effect on her temperature.

Examination revealed she was a very sick woman lying in bed complaining of difficulty in swallowing, generalized muscular pains, stiffness of the neck and was in a partly stuporous condition. There was some rigidity of the neck, no rales could be heard in the chest.

Complete blood count was as follows: Hemoglobin 75%, erythrocytes 3,423,000, leucocytes 9,000, polymorphonuclears 83%, lymphocytes 16%. Sedimentation rate 65 mm., blood sugar 170 mg. per 100 cc. blood. Her dose of insulin was raised to 40 units daily.

Due to the fact that there was an epidemic of poliomyelitis at the time, Dr. L. E. Daniels was called in consultation. Spinal fluid was negative except the sugar showed 125 mg. and poliomyelitis was ruled out.

Agglutination tests for undulant fever, typhoid fever, tularemia and proteus X were negative.

Patient was placed on 5 grains of aspirin every three hours and on August 14, 1946 the tem-

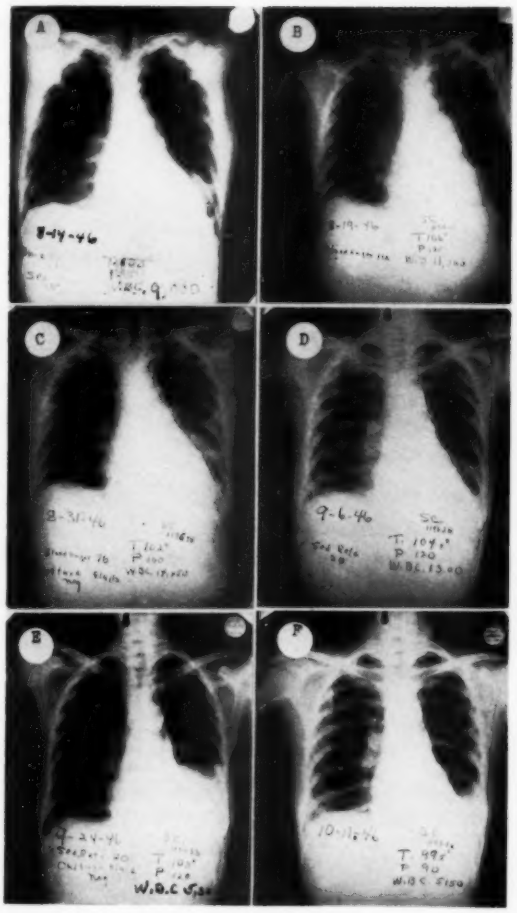

Figure 1, Case 1

perature dropped to 101 with daily remissions to normal; however, at this time a few inspiratory rales could be heard at the left base.

X-rays of the chest on August 14, 1946 showed some pathology at the base of both lungs particularly on the left. Findings were consistent with mild bilateral pneumonia, possibly the virus type (Fig. 1A).

Patient was placed on sulfamarazine, grains 7½ every three hours, 1,000 cc. 10% glucose given by vein and CO_2O inhalations were given every two hours. The white blood count was 11,300. On August 18th, CO_2O inhalations were discontinued. Patient's temperature varied from 102 to 103 with daily remissions to normal.

On August 19, 1946 temperature reached 106 after a chill. Blood smear for malaria was negative. At this time more rales were present throughout the lung and the report of the X-ray taken at this time was as follows: "Definite mottling throughout both lungs consistent with diffuse broncho-pneumonia" (Fig. 1B). Penicillin in 25,000 unit doses was added to the medication, inasmuch as the white blood count was now 18,300 with 95% polymorphonuclears and 5% lymphocytes.

There was no appreciable change in the temperature and on August 21st the temperature was still 105 with daily remissions to only 102 and sulfamarazine was discontinued. Penicillin was continued but in 50,000 unit doses every three hours. At this time the CO_2O inhalations were started, 5 grains of aspirin were given every three hours, 500 cc. blood transfusion was given and patient placed in an oxygen tent. The temperature gradually began to drop, blood sugar was 112 mg. and white blood count 14,500.

By August 25th the temperature was varying from normal to 101 degrees. The patient began to complain of pain in the lower left chest and a pleural rub was heard. On August 28th CO_2O inhalations were discontinued.

On August 31st X-rays of the chest showed residual changes in the left costaphrenic angle of the left lung (Fig. 1C). Examination of the chest revealed an area of dullness about the size of an apple with amphoric breathing in the left base posteriorly, just to the left of the spine. On September 1st penicillin was disconitnued. On September 3rd the white blood count was 10,500. On September 4th the patient's temperature again rose to 103 with daily remissions to 101.

X-ray September 6th showed haziness about the left diaphragm with marked density in the posterior sulcus. There were increased posterior shadows of glands at the right hilum (Fig. 1D).

On September 7th surgical consultation was called, a needle was inserted in the area of dullness and 5 cc. of sterile fluid was withdrawn. Penicillin was started and continued until the 11th with no appreciable change in temperature. A rash appeared and penicillin was discontinued. Aspirin was continued until September 13th.

The patient's temperature varied from normal to 100. Patient was allowed to sit up in a chair for short intervals.

On September 24th marked dullness in the left base was noted and X-rays showed hydropneumothorax in the left chest, and the lateral view showed the fluid to be in the posterior part of the left chest (Fig. 1E). White blood count on September 27, 1946 was 5,300. On September 30th 600 cc.'s of sterile fluid was aspirated from the left chest. There was no appreciable change in the temperature, there being a daily rise to 100 degrees from normal. Aspirin was discontinued. The only medication the patient was now taking was a daily dose of insulin and intravenous vitamin B.

On October 2nd a typical penicillin rash appeared and it was treated locally. On October 9th a fractional test meal showed no free hydrochloric acid. On October 10th 250 cc.'s of sterile fluid was removed from the left chest. By October 13th the temperature dropped to normal and remained so. On October 11th X-rays showed a very thin fluid level at the base of the left lung. Area of density was greatly reduced over that of previous X-ray (Fig. 1F).

The patient was allowed up in a chair and was ready to be discharged when on October 20th there was a sudden rise of temperature to 104 degrees. A few rales were heard at the left base. The patient was placed on CO_2O inhalations every two hours and 5 grains of aspirin every three hours. The next day the temperature rose to 105 degrees in the afternoon and gradually returned to normal at night. In three days the daily rise had been reduced to 100 degrees and by October 25th the temperature became normal. All medication was discontinued and on October 28th patient was discharged from the hospital and had no further trouble.

This case illustrates how long a patient can run temperature and symptoms with an influenzal infection, especially when complicated with some mixed infection. Apparently aspirin and inhalations of CO_2O along with toxemia combatting measures have as much effect on the temperature and spread of the disease as penicillin and sulfa drugs. When the temperature was elevated and the white count increased, penicillin and sulfa drugs seemed to have a beneficial effect. The sudden re-occurrence of symptoms and X-ray signs in the chest when the temperature had dropped to normal was probably due to re-infection. This re-infection was probably carried by the blood stream. This observation is noted in many cases of influenzal pneumonia which have apparently recovered and suddenly have a relapse.

PSITTACOSIS AND ORNITHOSIS: Psittacosis was first described in 1880 by Ritter[14] who associated it with the presence of sick parrots and love birds in the patients' homes. On the one hand it resembles typhoid fever; on the other hand influenza, because of the atypical pulmonary lesions. During the following fifty years various outbreaks have been described which were attributed directly to exposure to sick birds of the psittacine family. In 1930 there were several outbreaks of psittacosis which apparently were transmitted to other fowl than the parrots and love birds. This brought about a very comprehensive study of this disease. In 1941 Karl Meyer[15] of the University of California was successful in isolating a virus, similar to that of psittacosis, from the lung of a patient who had a history of exposure to pigeons. Recent studies have also shown the presence of the virus in barnyard fowl and other species of birds. In view of these discoveries Meyer and his associates suggested that the term psittacosis be reserved for human cases occurring from exposure to psittacine birds such as parrots, parakeets, love birds, and canaries; and that ornithosis be used to designate the disease caused by exposure to doves, pigeons, chickens and other barnyard fowl. These findings have brought about a public health problem in which pigeons have been found to be as much of a menace to the public health as a dangerous rabid dog.

SYMPTOMS: The onset of psittacosis is usually abrupt with malaise, anorexia, headache, backache, photophobia and chills. The patient is often restless, has headaches, a non-productive cough and may become delirious. At times epistaxis may occur and in some instances a picture resembling typhoid fever may be present with rose spots on the abdomen. The pulse is relatively slow when compared with the high temperature. The first signs appear slowly in the chest and simulate very much those found in influenza. The X-ray examination is practically the same as that described under influenza.

The cough, as a rule, is non-productive, but sputum when it is produced is very tenacious and is not pink, as found in influenzal pneumonia. The blood count shows a leukopenia, but at times at the onset of the infection a slight leukocytosis may be present. In addition to typhoid this disease can be very easily confused with influenza and other atypical pneumonias not caused by the virus of psittacosis. Typhoid fever can be excluded by negative blood and stool cultures and negative Widal reactions. To further differentiate it from influenza the mouse test will show the presence of the psittacosis virus in the sputum and is very valuable. One may also perform a complement fixation test which is of diagnostic significance. It is well to remember, therefore, that a virus pneumonia can be transmitted by most any bird or fowl and when atypical pneumonia is discovered, the presence of this disease among barnyard fowl, pigeons and parrots which the patient may have

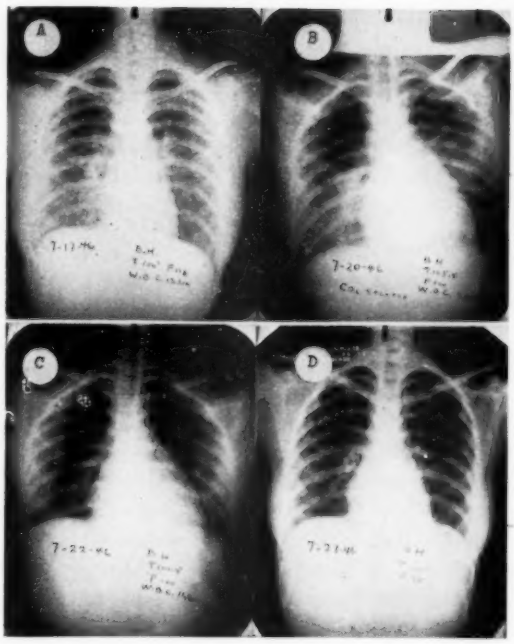

Figure 2, Case 2

contacted should be investigated. The following case illustrates such a condition:

Case #2, B. H. #7501: This patient was seen on July 18, 1946 at St. Luke's Hospital in consultation with Dr. L. C. Hepp and Dr. E. P. Sheridan. The patient had had an uncomplicated delivery by Dr. Hepp on July 9, 1946, at which time the blood count was as follows: Hemoglobin 91%, erythrocytes 4,520,000, white blood count 20,650, polymorphonuclears 80% ; lymphocytes 20% and urinalysis negative. Patient did very well until July 13th when she started to run a temperature which reached 103 degrees. At this time 25,000 units of penicillin was started every three hours and 1,000 cc.'s of 5% glucose given by vein. The temperature continued to rise until on July 15th it reached 106. The patient was complaining of headaches and aching all over. A spinal tap was done which was entirely negative, the sugar being 47 mg./100 cc. Blood culture and urinalysis were negative. White blood count was 13,350 with 80% polymorphonuclears and 19% lymphocytes and 1% eosinophiles. Agglutination tests for typhoid, undulant fever, tularemia and proteus X were negative. Sputum smear showed some pus but no predominating organism. A culture was made of the sputum which was negative. Sputum was sent out for the Mouse Test to determine the character of the virus but no report was obtained as the specimen was presumably lost.

The patient now began to cough considerably and raised a very tenacious sputum. The penicillin was increased to 60,000 units every three hours. On July 18, 1946 my first examination of the patient showed a very sick woman, incoherent and in what appeared to be a typhoid-like state. The blood pressure was 100/60, reflexes were negative and rales were heard over the entire chest on inspiration, with wheezing rales on expiration. The heart tones sounded fair, no murmurs could be heard. X-rays taken the day before: A single film of the chest showed the heart and great vessels to be negative. There was a definite cloudy mottling in the lower two-thirds of both lungs. This had the appearance of bronchopneumonia (Fig. 2A).

Upon going into the history it was found that a few days before her entry into the hospital, the patient had been exposed to sick turkeys, a number of which had died. Due to this history and the typical clinical findings a diagnosis of virus pneumonia, probably ornithosis, was made. CO_2O inhalations were given every two hours, the penicillin continued and 500 cc.'s of 5% glucose intravenously was given daily. The temperature began to drop and on July 19th, 1946 the temperature was 103 degrees. The penicillin was increased to 120,000 units every 3 hours.

On July 20th X-ray of the chest was as follows: A portable film of the chest showed a moderate clearing of the previously described infiltrative process in both lungs (Fig. 2B). On July 20th the temperature receded to 100 degrees and penicillin was reduced to 60,000 units every two hours and the CO_2O inhalations were stopped; however, that afternoon the temperature again rose to 103 degrees, the white blood count was 8,000 at this time. 250 cc. of whole blood was given by vein. The temperature did not recede, so on the evening of the 21st CO_2O inhalations were again started. On the 22nd the temperature dropped to 99 degrees. The white blood count at this time was 11,800, 69% polymorphonuclears, 26% lymphocytes, 1% monocytes and 5% eosinophiles. It was noted that following the inhalations of CO_2O the patient raised a large amount of tenacious sputum. On July 22nd a portable X-ray film of the chest showed considerable clearing of the previously described bronchopneumonic process in both lungs (Fig. 2C).

The penicillin was reduced to 30,000 units every two hours and the temperature remained normal until the 24th, at which time CO_2O inhalations were discontinued; however, on July 25th the temperature again rose to 101 degrees and penicillin was discontinued. CO_2O inhalations were again started and aspirin given every three hours. The patient's temperature receded to normal, with daily rises to 101 degrees. On July 27th a regular X-ray film was taken and the chest showed a marked clearing of the previously described pneumonic process (Fig. 2D).

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On July 28th the CO_2O was discontinued and the aspirin continued. On July 29.h there was a sudden rise of temperature to 101 and CO_2O inhalations were again started and within 24 hours the patient's temperature had dropped to normal. Aspirin and CO_2O were discontinued and the temperature remained normal until discharge on August 2, 1946.

This case was probably one of virus pneumonia. Due to the history, the course of the disease and clinical findings, ornithosis could not be ruled out.

Investigations revealed there was a typical respiratory infection among barnyard fowl in this area at the time of this woman's illness, but no demonstrable virus could be isolated.

The white blood count was slightly elevated at the onset of infection, but this is rather typical of the disease. It appears that penicillin, even in large doses, had no great effect on the temperature, but CO_2O inhalations and aspirin appeared to be of much value in the treatment of this case. We feel that CO_2O inhalations removed some of the tenacious sticky sputum and prevented further small areas of atelectasis from forming.

OTHER VIRUSES: It has been recently shown that the virus of lymphgranuloma venereum[16] and trachoma[17] and lymphocytic choriomeningitis[18] will produce pulmonary lesions in experimental animals. Involvement of the lung to a degree sufficient to give X-ray signs is extremely rare. Interesting observations made by Rake[17, 19] and his associates show that the viruses, such as lymphgranuloma venereum and trachoma are susceptible to the chemo-therapy with the sulfonamides while psittacosis and meningo pneumonitis are not affected.

Dr. Frank L. Horsfall[20] recommends the use of the Strep M. G. test and cold agglutinin test to establish a diagnosis in atypical pneumonia.

He stresses the fact that the blood must be kept at room temperature and serum removed before storing in the icebox. Even by these methods causative agent can be isolated in only 75% of the cases.

RICKETTSIAL INFECTIONS: Although not true viruses the rickettsias are capable of producing atypical pneumonias. Pulmonary lesions have been recognized as part of the clinical picture in such rickettsial diseases as typhus and Rocky Mountain Spotted Fever.[21]

In 1937 Derrick[22] described a new pathologic entity in Australia to which he gave the name "Q" fever. These cases gave a clinical picture greatly resembling psittacosis except that a punctate rash usually occurred on the 14th day, but apparently no pulmonary lesion developed.

AMERICAN "Q" FEVER: An agent closely related to the Rickettsia of Australian "Q" Fever has been isolated in Montana by Davis and Cox[23], which seems to affect persons living in the states of Idaho, Montana, Wyoming, Nebraska, Oregon, Nevada and Washington, but no pulmonary signs or symptoms could be found in these infections. However, in 1940 a so-called pneumonitis epidemic broke out among employees of the National Institute of Health in Washington, D. C. who were working with the agent of "Q" fever.[24] In this epidemic one of these patients died. The clinical features are very much like that of psittacosis and when the patients did develop a sputum it was thick, tenacious, white and not blood tinged. In most of the cases physical signs were lacking and the X-ray picture was the only evidence of pulmonary involvement.

TULAREMIC PNEUMONIA which is caused by the bacterium tularense is often confused with influenzal pneumonia and psittacosis as the clinical picture is very similar. Early diagnosis by laboratory methods is very difficult as agglutinins never appear in the first week of illness and occasionally four weeks must elapse before a diagnosis can be made.[6]

The intradermal test[25] for the presence of tularemia is often positive the end of the first week of the illness but should not be relied upon alone in making a diagnosis.

Hunt[7] has shown that a therapeutic test with streptomycin is a valuable aid in early diagnosis and at the same time institutes specific treatment for the infection. He successfully treated eleven cases of tularemic pneumonia with streptomycin of which five were the primary form.

The author has seen only one case of primary tularemic pneumonia. This was seen in consultation in Wyoming but he originally made an erroneous diagnosis of virus pneumonia. The man had skinned several rabbits and had been bitten

by ticks but no primary lesion was ever seen. The case did not show agglutinins in the serum until the beginning of the fourth week.

BRUCELLOSIS: Occasionally brucellosis will show pulmonary complications and unless agglutination and intradermal tests are done it might be confused with virus pneumonia. Hayden and Kyger[26] have recently reported seven cases.

THE MYCOSES, especially coccidioidomycosis in the early stage might be confused with virus pneumonia. The X-rays and blood count with an increase in eosinophiles should make one suspicious of this condition. One should have skin tests, sputum examinations and serological studies done to make a diagnosis.

TREATMENT

The treatment of virus pneumonia is almost entirely supportive or symptomatic. In influenzal pneumonia the toxemia and anoxemia are the principal conditions to combat. Fluid intake, either orally or parentally, must be given, from 3,000 to 5,000 cc. daily. Intravenous glucose solutions in distilled water or normal saline are of great value, especially in combatting toxemia and acidosis. We have found that the use of acetylsalicylic acid is of as much value as any of the known drugs. It should be given in large doses and supplemented whenever necessary by codein. Expectorants are helpful when the sputum is scant, but steam inhalations with tincture of benzoin afford a great deal of relief. Oxygen therapy, especially when cyanosis and dyspnea are present should be employed.

Since 1930 the author[27, 28] has given all patients with beginning virus or bronchial pneumonia routine inhalations of 90% oxygen and 10% carbon dioxide every two or three hours. By this method it is felt that small areas of atelectasis that would develop are minimized, the course of the disease is shortened, and the spread of the infection throughout the lung is not so extensive. At times transfusions from a convalescent donor are of great value in the treatment of virus pneumonia.

The use of sulfonamides, penicillin and streptomycin should be reserved for cases that develop secondary infections, in addition to the virus infection. They are of great help when these complications exist. They should be used with caution, but in a true, uncomplicated virus pneumonia they are absolutely worthless and at times cause serious trouble.

Vitamin B and Vitamin B complex are of great aid when nutrition cannot be maintained and they should be continued throughout convalescence.

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CLINICAL ASPECTS OF BRONCHIAL ASTHMA, DIAGNOSIS AND TREATMENT

(Stressing correct diagnosis and early treatment)

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FACTORS involving the etiology of diseases of the respiratory tract like the asthmas, and their various aspects such as susceptibility, insusceptibility, predisposition, hypo or hyper sensitivity, challenge our patience and diagnosis.

Etiologically, bronchial asthma is classified into two main groups, the extrinsic and intrinsic. The extrinsic causes may be by inhalation, ingestion, or direct skin absorption of the offending substance, while the intrinsic type is caused by substances formed within the body of the individual.

It is important to differentiate these two groups.

The extrinsic type is the true atopic asthma and the symptoms are produced by the resulting effect of an antigen-antibody reaction in the individual with the liberation of a toxic histamine-like substance often referred to as the "H" substance. It is in this group that we usually get a positive family history and a past history of the patient having manifested some evidence of allergy* from infancy or childhood, such as eczema urticaria, food intolerances, hay fever, or a tickling cough and bronchitis of undetermined origin. It is in this type that positive skin tests are usually found and a blood and sputum eosinophilia is present. However, a frank atopic asthma of the extrinsic type may be the first manifestation of allergy and develop in later life from long contact with some allergen such as a baker becoming sensitized to wheat or rye, or a furrier to animal danders. This type of asthma is of itself seldom fatal but may render the sufferer a long and miserable existence.

The intrinsic type comprises about 20% of all cases and usually develops in later life. These cases appear to be typically allergic but no extrinsic atopic factor is found to be the cause. The family history is usually negative and skin tests are, likewise, usually negative or unimportant. Changes in diet or in the immediate environment have no effect on the asthma. This type may be severe and rapidly fatal. The symptoms are the same as in the extrinsic type. The blood is often normal although in some cases there is a high eosinophilia, and it is in these patients that there is occasionally found a coexisting periarteritis nodosa. The physiological mechanism is somewhat different. There is probably no antigen-antibody mechanism responsible. There is, however, some relationship to atopy and clinically these patients are indistinguishable from patients with extrinsic asthma. It is thought that in intrinsic asthma the "H" substance is released in the shock organs involved by toxic products of infection, emotional conflicts, or in metabolic and glandular disorders. Disturbances in the Thyroid, either hyper or hypo function, and ovarian disorders are the most important glandular considerations. It is in this group that infection is often present, especially in the paranasal sinuses or bronchi, and bronchiectasis and emphysema follow early.

In many long standing cases there frequently exists a combination of the extrinsic and intrinsic types as infection is superimposed on a purely atopic asthma.

The physiology of bronchial asthma can be best described as a syndrome due to smooth muscle spasm and capillary permeability causing a narrowing of the bronchial passages and edema of the mucosa with increased secretion of mucus resulting in mild to nearly complete bronchial obstruction. The secretions often become dried and inspissated, forming the characteristic plugs which are responsible for such severe symptoms in many cases. The bronchial musculature is under control of the autonomic nervous system of which the sympathetics serve as the dilator supply and are usually dominant over the constrictor parasympathetics. In man one of the responses of the body to an "antigen" is the constriction of the bronchial musculature leading to a diminished air supply and relatively indistensible lung. This mechanism is due to vagal reflexes inaugurated by the inelastic lung which

Read before the Arizona State Medical Convention, Tucson, Arizona, May 9, 1947.

* Conditions in which tissues react abnormally toward infectious agents or toxic protein substances. Used synonymously with anaphylaxis, hypersensitiveness, hypersusceptibility, susceptibility and predisposition.

affect the respiratory center producing tachypnoea and dyspnoea. Contact with an allergen is not always essential. Anything that will stimulate the vagus into activity may incite an attack. Irritating gases, indigestion, shock, fright, sudden temperature changes, headcolds and the like may bring on asthma. Sectioning of the vagi in an inelastic lung condition decreases or abolishes the dyspnoea. Clinically, to reverse this sequence of events, we use adrenalin which has a powerful physiological action in stimulating the sympathetics, resulting in dilatation of the bronchioles and vaso constriction of the blood supply to the bronchial mucosa.

True bronchial asthma is the only disease characterized by attacks of dyspnoea or orthopnoea, wheezing and coughing associated with obstruction of the lower air passages while in between the attacks, the patient is apparently free of all symptoms. The attack may, however, be of long duration and the patient is then said to be "status asthmaticus." The asthmatic attack may start at any time but more often at night. The first sensation is often a heaviness or tightness in the chest with difficulty in breathing. At the onset there is often a tickling cough or excessive belching. The dyspnea increases and the patient has to sit up to breathe, and the accessory muscles of respiration are brought into use. It is an expiratory type of dyspnoea and the condition is really one of acute emphysema. There is now wheezing and coughing and the patient often appears to be in shock with a cold clammy perspiration and a rapid, weak pulse. Often there is great apprehension. There may be fever, especially in children. After a variable period of time when the patient appears to be in extremus with violent coughing spells he finally expectorates some mucus or mucus plugs with great relief and the attack ends. The patient may be left exhausted but the chest clears up entirely and between attacks there are characteristically no symptoms. In mild attacks there may be no wheezing audible except with the aid of the stethoscope, although the patient is still considerably distressed.

In the diagnosis of bronchial asthma a careful history and physical examination are of utmost importance and often more important than skin tests. A detailed account of the patient's life, occupation, environment, time of day or season of the year of the attacks, dietary habits, food idiosyncrasies, ingestion of drugs, relation to colds, emotional life, etc., should be ascertained. In speaking of emotional status, I have a patient who gets various allergic manifestations when the stock market goes down and he improves when the market goes up. Skin testing is one means of determining the offending allergen. Even when positive skin tests are found, they are not important unless they can be corroborated clinically. A positive test merely means that the patient has been, is, or is potentially hypersensitive to the substance. In many instances more conclusive results can be obtained by trial or elimination diets in determining food sensitivities. Many cases have been solved by studying a carefully kept food diary in correlation with the patient's symptoms. However, a definitely positive test must be investigated thoroughly. Recently a young man gave a strongly positive test to horse dander but could not possibly see any relationship to his asthma. I made a visit to his home and found that he was sleeping on an old davenport stuffed with horse hair. If it is decided a patient should be tested, complete testing should be done. No one can guess which allergens will or will not react and just the ones omitted may be the offenders. Occasionally, tests are made to special substances, as not long ago an automobile painter consulted me because of a recently developed urticaria and asthma. On close questioning it was found that he was using a new kind of paint in spraying. A patch test gave a 4 plus reaction and all symptoms cleared up when he avoided that particular paint.

In addition to the allergy tests, every patient should be given a complete general workup. The typical asthmatic sputum contains much mucoid material or "plugs," eosinophiles and Charcot-Leyden crystals. Other than the eosinophilia there is nothing characteristic in the blood. Frequently, a high uric acid is found and gout may be associated. In infectious cases the sedimentation rate is often elevated, especially if bronchiectasis is present. Foci of infection in the sinuses, teeth, tonsils, bronchi, or elsewhere should be looked for as they may be important contributory factors.

An electrocardiagram should be made as a routine on all adult patients. In the acute attacks the electrocardiograph may reveal changes characteristic of coronary insufficiency. For accurate evaluation it is advisable to have an in-

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terval tracing rather than one made during the attack.

On X-raying, the heart is usually normal or diminished in size unless there is also an associated cardiac condition. There is nothing characteristic in lung films of an uncomplicated case; however, chronic cases usually show heavy hilar shadows, emphysema, pulmonary fibrosis, or bronchiectasis in some degree.

In the differential diagnosis one must consider cardiac asthma. This should not be too difficult, but it is surprising how many cases of cardiac decompensation are treated for bronchial asthma. In cardiac asthma morphine is ideal and epinephrin is contra-indicated as a rule, while the reverse is true in bronchial asthma. Morphine will usually quiet the patient and stop the wheezing in a cardiac, while in an asthmatic, if morphine is given, it may quiet the patient, even to the point of death, but the wheezing does not stop. In cardiac asthma pulmonary edema is present and the rales are moist, while in bronchial asthma the lungs are usually dry and the rales are musical and sonorous The most striking feature of the patient in a seizure of bronchial asthma is that the dyspnoea is of the expiratory type.

Pulmonary tuberculosis should be ruled out. Patients with pulmonary tuberculosis may also have asthma on an allergic basis due to the ordinary sensitivities or the development of a sensitivity to the products of the tubercle bacilli. Other forms of bronchial obstruction must be looked for. In children a foreign body may present difficulty in diagnosis, but in such a case there is usually unilateral wheezing and congestion. The history, bronchoscopic and X-ray visualization will aid in arriving at a proper diagnosis. Bronchogenic carcinoma or other tumors, likewise often cause asthmatic symptoms. Chronic bronchitis, emphysema, bronchiectasis, lung and mediastinal tumors, substernal goitre, persistent thymus, silicosis, or aneurysm must sometimes be ruled out. In all of these conditions a careful history and physical examination with the aid of X-ray and other laboratory procedures will help in reaching a correct diagnosis. In some cases X-ray visualization with iodized oil is necessary. Another point to bear in mind is that bronchial asthma plus some other condition might be present in the same patient and care must be taken not to overlook some other disease more important than the asthma itself.

I am going to divide the treatment of bronchial asthma into four headings:

1. Specific or preventive treatment.
2. Treatment of the attack.
3. Non-specific treatment and
4. Treatment of complications.

1. The specific treatment is the most important. When possible, this consists of eliminating or avoiding the offending factor or factors and hyposensitization to them when elimination is not feasible. In avoiding certain foods or other offending substances, the most careful instructions must be given so as to avoid even traces of the offenders as they may be ingredients in obscure mixtures or unsuspected food combinations. Carelessness leads to failure and when necessary, diet lists and detailed charts showing where the causative allergens may occur should be provided. Not long ago I saw a man very sensitive to rabbit fur. He was working as a hat salesman, and as the felt used in mens' hats frequently contains rabbit hair, he had become sensitized to it through many years of contact. By changing his occupation and avoiding rabbit hair, he was completely relieved.

With substances such as orris root, dust, pollens, molds, and various other unavoidable inhalants or common foods which are practically impossible to completely avoid or eliminate, it is necessary to hyposensitize. Briefly, this consists of a series of subcutaneous injections of an extract of the offending material or materials, beginning with minute doses and gradually increasing to the point of tolerance or to what is considered an adequate immunizing dose. In certain cases oral hyposensitization is possible and in some patients propeptan therapy works well in overcoming food allergies.

The earlier in life the treatment of bronchial asthma is begun, the more favorable the outlook, and more serious asthma or its complications in later life may be prevented. As a preventive measure, it might be mentioned here that two allergic individuals should not marry as their progeny, according to the Mendelian theory, would be unlikely to escape some form of the disease.

2. Treatment of the Attack: While an attack of uncomplicated bronchial asthma seldom endangers life, it does so occasionally from ex-

haustion or heart failure. It always causes distress and urgent relief is desired and welcome.

Adrenalin is the one drug "par excellence" in relieving acute asthma. 0.5 to 1.0 cc. of a 1-1,000 solution subcutaneously usually gives prompt relief. This dose can be repeated every hour or two if necessary, until the patient is comfortable. Adrenalin in oil provides slower absorption and a longer lasting effect. Nasal spray with a 1:100 solution of adrenalin, or one of the synthetic preparations as Asthma or Vapo Nephrin may in itself relieve mild attacks or can be used to augment the subcutaneous dose. In older patients the effect on the heart must be watched and its prolonged use may have other deleterious effects, especially on the liver.

Aminophylline intravenously in 3¾ grain doses usually in 10 cc. of distilled water, given alone or in conjunction with the subcutaneous adrenalin, is very effective in giving prompt relief. Larger doses are not usually necessary or advisable as they may cause untoward reactions, especially nausea and vomiting or cardiac distress. The injection should be given slowly, at body temperature. The same dose can also be administered in 50 to 100 cc. of 50% glucose solution in acute cases. Aminophylline in 5 to 10 grain doses may be given in 20 or 30 cc. of tap water as a retention enema. The patient can administer this at home with good results. Aminophylline suppositories may also be used.

When a patient has become fast and does not respond to adrenalin or aminophylline, these drugs should be discontinued for a time and other preparations tried. After a rest they may again become effective. Sodium iodide in 15 to 30 grain doses given separately or with the aminophylline intravenously is especially effective where the secretions are tenacious.

Oxygen or oxygen and helium mixture may relieve the dyspnoea and promote comfort. The low specific gravity of an 80% helium and 20% oxygen mixture allows the gas to penetrate more easily through the obstructed bronchioles.

When the above measures do not relieve the attack, the asthma is probably not due to bronchiolar spasm but to bronchial "plugging." In these cases I often use an emetic with good results. Syrup of Ipecac orally or Apomorphine hydrochloride hypodermically are both good. The vomiting and coughing loosen the tenacious mucus "plugs" and they are brought up with great relief to the patient. In the cases not too acutely ill, which cannot be relieved with these more conservative measures, a bronchoscopic may be necessary. This will serve as a diagnostic as well as a therapeutic measure.

Sedation during the acute paroxysm is essential. It is wise to talk to the patient and give assurance. Morphine is contra-indicated as are other of the stronger narcotics. Morphine depresses an already fatigued respiratory center and may cause death. One of the main ideas in treating asthma is to clear the bronchial tubes. Strong opiates depress the cough reflex and the mucus is not expectorated. It becomes thickened and forms tenacious "plugs" which cause the obstruction that often leads to "status asthmaticus." It has been demonstrated pharmacologically that morphine constricts the bronchial musculature. Morphine also frequently causes a hangover with nausea and vomiting and this may serve to aggravate an already existing dehydration and acidosis. It must also be remembered that some patients are allergic to the narcotic itself. The danger of drug addiction is great if a patient once gets started on opiates and it may lead to serious and undesirable complications.

There are so many other means of sedation available that there is never any excuse for using morphine. I find ether and oil per rectum very satisfactory in most cases. 2 or 3 oz. of ether with an equal amount of mineral or olive oil as a retention enema will usually give four to eight hours of relaxation or sleep. The dose can then be repeated, if necessary. The bromides and barbiturates in adequate dosage are useful. Paraldehyde or chloral hydrate can often be tried advantageously. On occasion if a narcotic is deemed absolutely necessary, demerol hydrochloride is probably the safest, although contrary to an article in a popular magazine, it is definitely habit forming and its administration carries with it all the dangers of the stronger opiates, but, perhaps to a lesser degree.

Codeine in large doses is not advisable. Hycodan-bitartrate in 5 mgm. doses is much better and safer. Apomorphine hydrochloride in small doses in a cough mixture acts well as a sedative and expectorant.

Some of the enteric coated pills containing ephedrine or similar drugs, aminophylline, iodide, and phenobarbital are useful to give at bedtime and their delayed absorption may aid

in preventing middle of the night attacks.

In my hands hyposensitization to histamine proved to be of questionable value in asthma. Likewise, the anti-histaminics, benadryl and pyribenzamine afford little or no help except for their sedative action. They are, however, of value in pollen asthma, hay fever, urticaria, and some physical allergies.

The general condition of the patient must receive prompt attention if the asthma has been acute or of very long duration. In this climate especially, the treatment of dehydration and acidosis is very important. These patients have often been coughing and vomiting and unable to retain fluids or food. Prompt intravenous administration of 10% glucose in saline, distilled water or Ringers solution is desirable. This has several good effects. In addition to supplying liquids and nourishment this hypertonic solution aids in relieving the pulmonary congestion. The carbohydrate aids in overcoming the acidosis as well as restoring the liver glycogen which may have been depleted by the frequent or excessive use of adrenalin. It is important to protect the liver which is the source of the plasma proteins as well as an important seat of antibody* formation both in producing immunity and hyposensitization therapy. The blood of severe asthma patients has been shown to have a decreased total protein level as well as a disturbed albumin-globulin ratio. Amino acids are valuable where there has been prolonged intoxication or starvation or where a protein edema exists, but one should first ascertain whether or not the patient is allergic to any of the ingredients of the preparation used. Added to the intravenous fluids, one may use aminophylline, iodides, vitamins, or other indicated drugs.

Other valuable preparations that may be used are ephedrine, ammonium chloride, atropine or its derivatives, caeffeine and coramine. In older patients, ephedrine is not advisable because of the danger of bladder congestion which may result in dysuria or bladder retention to complete obstruction. Propadrine HCL or Nethamine may be substituted. Potassium Iodide is the most favored expectorant. For all patients having severe asthma it is usually wise to put the patient in as dust-free room as possible and remove or cover all feather pillows. Rugs, drapes and upholstered furniture should be removed.

* Antibodies are body cell secreted ferments such as agglutinins, preciptins, opsonins, lysins, bacteriocidens, etc.

In several cases of intractable asthma, I have had success from the administration of inhalation ether anesthesia. One dramatic response was in a seemingly hopeless case of "status asthmaticus" where it was obvious that the patient was suffering from bronchial obstruction. She was kept in third state anesthesia for about ten minutes. During the post anaesthesia vomiting and coughing, she brought up several tenacious "plugs." For the first time in months she was able to breathe freely and three days later she walked out of the hospital.

In less acute stubborn cases, other procedures are sometimes worthy of trial. It was noted long ago that when an asthmatic developed some intercurrent infection associated with a high fever the asthma disappeared for a variable, but often considerable length of time. Artificial fever was, therefore, tried and in some instances gave relief.

Foci of infection should be eradicated if possible. Stock or autogenous vaccines are sometimes worth a trial in chronic infectious cases. Non-specific foreign protein therapy, such as typhoid vaccine, occasionally stimulates a favorable reaction. X-ray therapy to the sinuses and bronchial tubes is occasionally effective. In children radiation therapy to the naso pharynx is frequently helpful. One of the newer therapeutic measures has been the use of penicillin. I have used aerosol penicillin with oxygen pressure in conjunction with the usual injection method in about 75 cases. My conclusions are that it is of no value in uncomplicated atopic asthma, but it is of great temporary value in cases where there is a superimposed bronchial or sinus infection. No lasting relief can be expected unless the cause of the underlying allergy is found and corrected. While the penicillin is being administered the infection is often brought under control and the "pussy" expectoration subsides or frequently appears to clear up completely and the general condition of the patient improves. Although I encountered several patients who developed skin rashes, because of sensitivity to the penicillin, in only one case was it necessary to discontinue the course of treatment. More recently I have found the crystalline penicillin better for inhalation. Sometimes I found that changing the brand of penicillin was effective. Streptomycin may prove to be of value in penicillin resistant cases.

A non-spicy and low sodium and sodium salt-

free diet is advisable to produce a reasonable degree of dehydration which is desirable in chronic cases. Ammonium chloride alone or in conjunction with diuretics is indicated where there is evidence of fluid retention. Frequent small meals should be prescribed.

Vitamins and tonics are helpful. Various vitamins have had their day in the treatment of asthma. First D, then B or nicotinic acid, and more recently C in large doses. There have been reports of Vitamin P increasing capillary resistance and being of benefit in allergy conditions. None is specific, but multivitamin therapy for improving the general resistance is helpful. One must be careful that the patient is not sensitive to some ingredient in the vitamin used. I often find it better to give each vitamin separately.

There is no question about there being an added burden to the heart in bronchial asthma and I have used digitalis in tonic doses for many years. It would seem to aid in preventing cardiac failure and may be better than waiting until a break in compensation occurs and then digitalizing the patient.

One of the oldest known tonics or alteratives is arsenic. In the past few years it has again come into prominence. Given in the form of Fowlers solution in 3 to 5 minim doses or arsenic iodide in 1/12 to 1/20 grain doses it may be tried.

It has been my practice to advise asthmatics to give up smoking. All of us know that tobacco or other smoke causes bronchial or pulmonary irritation and in many cases appears to be a factor in producing a bronchitis which can only aggravate the asthma. Avoidance of dampness, smokes, fumes, dusts, undue exposure to inclement weather or colds, avoidance of physical exertion, and overeating, securing plenty of rest, etc., are all routine instructions.

The psychic aspect of the patient must be considered. Most allergic individuals are of a nervous temperament or "high strung." It is well known that worry, aggravation, emotional upsets and excitement may be the factors that induce the asthma. Frequently unsatisfactory home conditions, especially in children, are important considerations. The asthma may be the manifestation of a subconscious rebellion or pro test in the life of an allergic individual. These contributory factors have been described as the trigger mechanism—but the gun was already loaded. Certainly the primary allergy condition present cannot be on a psychogenic basis. It is important, however, in any case to consider all the psychic influences that might be contributing toward causing the attack and if possible relieve them. In some cases psychotherapy is advisable.

Change of climate is no doubt of great value in many cases. Unquestionably, the warmer, drier climate of parts of Arizona is desirable for many chronic asthmatics, but in an uncomplicated case it is likely that when prompt relief occurs the patient has left behind something which caused the asthma. That something may be atopic or, as stated above, some environmental factor having a nervous or psychic influence that was the trigger in setting off the asthma. Change of climate is justified after the patient has been given the benefit of a thorough study including a careful history, examination, and testing. Older patients with respiratory tract infection are helped by moving to a warm, dry climate. Others who are made worse by cold, high humidity and rain may be greatly benefited by a change of climate.

Surgical measures, as extirpation of the sympathetic ganglia or section of the vagus in the cervical region, have been attempted in the belief that the number of constricting stimuli to the bronchi will be reduced. Some cures have been reported but such dangerous procedures are seldom necessary. Removal of polyps or other nasal and sinus surgery should be done if indicated.

In the treatment of complications, I will mention a few of the major points.

Chronic bronchitis is probably the most frequent complicating factor and every effort should be made to clear it up. In my opinion the giving up of smoking is very important.

In emphysema the fitting of a tight abdominal support affords gratifying relief in many cases and should be used more often.

The value of postural drainage when bronchiectasis is present should not be forgotten.

Pneumonia is always a dreaded and serious complication.

Massive collapse of the lung is an emergency complication that occasionally arises abruptly and may prove fatal in bronchial asthma.

Results and Prognosis. All in all, in comparison with other chronic diseases such as chronic arthritis, cardiovascular renal disease, etc., the results of treatment are considered good. The

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patient's symptoms can usually be ameliorated even if not completely or permanently relieved.

In conclusion, the treatment should be started as early in life as possible before emphysema, chronic bronchitis, pulmonary fibrosis, bronchiectasis or cardiac failure have made full recovery difficult or impossible. The exciting factors must be found and either eliminated or successfully overcome by hyposensitization or both, and the contributory factors must be avoided. As a final word it must be remembered that everyone who wheezes does not have bronchial asthma.

HYPERTROPHIC PYLORIC STENOSIS AND VOMITING IN INFANCY

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OF all the symptoms indicative of underlying pathology in infancy, vomiting is the most common.

The three mechanisms through which vomiting is elicited are:[1]

1. Reflexly by irritation of the stomach or other viscus through the Vagus and sympathetics.
2. Impulses from other cerebral centers acting upon the vomiting center in the Medulla.
3. Chemical materials carried to the vomiting center through the blood stream.

The time of the appearance of the symptom complex of vomiting indicating underlying pathology, can be divided into three chronological periods; from birth until the end of the first week, from the first week to six months, from six months to two years, at which time the infancy period is at an end.

FIRST WEEK OF LIFE

While infrequent, developmental anomalies form a large group in which vomiting is the cardinal symptom, primarily because of an obstruction somewhere in the G. I. tract. They are:

I. *ESOPHAGEAL OBSTRUCTION:*

The most common of which is atresia with tracheo-esophageal fistula in which the upper esophagus ends in a blind pouch and the lower part communicates with the trachea or a primary bronchus. With an obstruction being high up the first and subsequent feedings will be regurgitated and the vomitus will contain no bile. There may be attacks of coughing and cyanosis due to aspiration of food, and because of the fistula, marked gastric tympany will be present. Farber's[2] test will be positive. This test is of value in diagnosing any gastro-intestinal atresia in the new born.

II. *DIAPHRAGMATIC HERNIA:*[3]

The symptoms depend on the number of abdominal viscera displaced into the thorax. Vomiting, cyanosis and dyspnea are present. Intestinal tympany on percussion and distant gurgling auscultatory respiratory sounds are pathognomonic.

X-ray studies readily confirm the diagnosis.

III. *INTESTINAL STENOSIS OR ATRESIA:*[4]

While persistent vomiting, dehydration and fever are symptoms seen 24-48 hours after birth, the most prominent symptom is marked abdominal distention. In two cases delivered by the author, the distention presented a marked soft part dystocia which made the delivery of the trunk quite difficult. Infant C. S. lived but two hours, infant D. B. lived thirty-seven hours. The latter infant regurgitated its first feeding and subsequent feedings thereafter. The vomitus at first was curdled milk but after the third feeding became bile colored. X-rays showed marked distention of the small gut and confirmed the diagnosis of intestinal atresia. However, supportive therapy and negative gastric suction did not maintain the infant until surgery could be resorted to. Postmortem examination in both cases revealed intermittent areas of 8 to 16 cm. in which there was isolated, partially occluded segments of gut joined by small bands, giving the picture as of a string of beads.

IV. *DUPLICATION OF THE INTESTINE:*[5]

Duplication of the alimentary canal may occur anywhere from the base of the tongue to the anus. Duplication, regardless of site, is usually a blind pouch and the mucosal lining secretes

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Presented before the Arizona State Medical Association, May 9, 1947.

a fluid, mucoid in character, causing the pouch to eventually swell to the point of obstructing that part of the canal to which it is adjacent. Hence, colicky pain, vomiting, dehydration, visible peristalsis and, occasionally, bleeding, if the canal mucosa sloughs off from pressure necrosis, will be present. The duplication can frequently be felt as a rounded, smooth, usually non-tender mass and is freely movable. X-ray studies may or may not confirm the diagnosis depending on the site of the duplication.

V. *MALFORMATION OF THE RECTUM AND ANUS:*[6]

Several types of malformation occur. However, regardless of type, the symptoms again are those primarily due to obstruction. Ribbon-like stools or complete absence of stools and rectal examination readily confirm the diagnosis.

VI. *MALROTATION OF THE INTESTINE AND COLON:*[16]

In incomplete rotation of the gut, the cecal portion will migrate and lie just below the distal half of the stomach. The reflected band of the peritoneum running from it will therefore lie across the descending portion of the duodenum and partially or completely obstruct same. Concurrently, because the small intestine lacks the normal fixation, there may be a volvulus of the entire midgut. As the rudimentary attachment of the mesentery of the small gut lies just below the origin of the superior mesentery artery, the twisting of the gut on its pedicle-like axis not only may obstruct the intestine but stenos or even completely close the superior mesenteric artery with resultant infarction. The majority of cases manifest themselves during the first three weeks of life although, dependent upon the degree of obstruction, they may show up at any time in later life.

Vomiting is the predominant symptom since obstruction is high in the gut. The usual signs of obstruction are present and the vomitus is bile stained, ruling out pyloric stenosis. X-ray studies reveal obstruction usually in the lower third of the duodenum and a Barium enema will show the cecum in the epigastrum. Hence, the condition offers no diagnostic difficulty.

In all of the above conditions, treatment is surgical after adequate therapy of the dehydration, avitaminosis (K & C) and correction of the acid base balance.

When the above developmental anomalies are ruled out, there remain three causes of vomiting in the first week of life:

The first is regurgitation of blood swallowed by the infant in its passage through the birth canal. This appears within a few hours after birth and promptly corrects itself with the emptying of the stomach.

The second condition is organic lesions of the brain or Tentorium caused by birth trauma which introduces itself with projectile vomiting bearing no relaitonship to feedings. The Moro and Magnus de Kleijn reflexes may be altered and partial or complete paralysis of one or more extremities may be present. Bulging fontanelles, areas of scalp injury and/or hematomas and bloody spinal fluid make the diagnosis certain. To be ruled out, of course, is the projectile vomiting of pyloric stenosis which, however, rarely manifests itself before the second week and the vomitus is not bile stained. Treatment is aimed primarily at reducing intracranial pressure, correction of dehydration, keeping in mind that dehydration is of value in this instance from the standpoint of reducing intracranial pressure, and introduction of Vitamins K and C into the infant's economy as well as other chemicals that hasten blood clotting.

Third, and the cause of 90% of all vomiting in the first week of life is dietary difficulties. Usually the formula is too high in fat or the curd tension is too high as is found in raw milk or milk heated only moderately. Also, acidified formulas may occasionally cause trouble in infants with an abnormally high gastric acid secretion. Experimental corrections of the formula usually ablate the symptom complex in 3-5 days.

Over distention of the stomach either from too large a feeding, too frequent feeding, or aerophagia also can be considered to fall into this group. Interrogation of the mother or nurse as to the formula and feeding habits of the infant plus postprandial observation to rule out aerophagia from sucking, readily reveal the solution for correction of the over distention.

SECOND WEEK TO SIX MONTHS PERIOD

I. The one developmental anomaly which, while present at birth, rarely manifests itself before 10-14 days after birth is hypertrophic pyloric stenosis.[7-8] Etiological theories are le-

gion. The theory of central nervous system injury during birth, the theory of relationship to Hirschsprung's disease, the theory of it being the end result of a pre-existing spasm, all lack adequate scientific proof. Bonell[9] has shown experimental proof that infants with pylorospasm do not produce protective ferments which have the function of destroying maternal foreign proteins absorbed by the infant. He believes this lends further support to Stolle's theory of pylorospasm being due to a hormonal action of maternal proteins on the smooth muscle of the infant's gut. However, experimental confirmation of his work has not been done in this country.

Regardless of etiological explanation, the condition presents itself as an enlarged pyloric valve ¾ to ⅝ of an inch in diameter, pink grey in color, and having a gristle-like consistency. Microscopically, the nerve structures are normal in number and architecture ruling out a neurogenic origin. In infants under ten days of age, the submucosa and mucosa are normal. However, after this time the forcing of food through the small lumen causes edema and leucocytic infiltration of the two layers, thereby further narrowing down the lumen and, hence, producing the typical signs of obstruction two or more weeks after birth. The hypertropied musculature is present at birth but by itself does not narrow the lumen to the point of producing obstructive symptoms. That there is probably a concurrent spasm is now the accepted belief. The five cardinal symptoms are:

(1) Regurgitative vomiting containing no bile followed in 1-3 days by projectile vomiting.

(2) Palpable right upper quadrant pyloric tumor best elicited right after a vomiting episode.

(3) Scanty stools (although starvation diarrhea was present in 15% of Lanman's[10] 425 cases).

(4) Visible gastric peristasis moving from left to right.

(5) The weight curve declines, in the absence of fever, and no evidence of infection is present.

Dehydration and alkalosis may or may not be present, dependent on how soon the physician sees the case, after the syndrome has first manifested itself.

In the differential diagnosis, pylorospasm is the main condition that will present any diagnostic difficulty. Infants with this pathology usually show a hypertonicity of the trunk and extremities. The vomiting begins soon after birth and is periodic, i.e., present for two or three days and then absent for two or three days. There is no palpable tumor. However, it must be realized that pylorospasm is considered by many to be but a lesser degree of hypertrophic pyloric stenosis.

Alimentary canal obstruction regardless of etiology (vide supra), all with the exception of esophageal obstruction, usually produce bile stained vomitus and initiate themselves soon after birth. In esophageal obstruction, the concomitant respiratory symptom assists in the diagnosis.

In intracranial injuries, the vomiting, while projectile, is bile stained and unrelated to food taking, and attendant neurological symptoms rule out stenosis.

If doubt still exists, x-ray studies are in order. However, when the five cardinal symptoms have been satisfied, there is little to justify the further handling of the sick infant.

Treatment by the Fredet-Ramnstedt operation is the procedure of choice. Ladd[7] in 177 cases operated on between 1936-1939 had a mortality rate of 0.56%. Lanman[10] between 1928-1931 in 150 cases treated by this operative technic, had a mortality rate of 2%. Donovan[8] in 100 cases reported in 1932, lost only one case and in 143 consecutive cases reported in 1937, had no fatalities. The above authors stress the reduction in mortality rates as being due to increased attention to combating the dehydration and acid base inbalance before the infant is reported to surgery. Also, the cases are being recognized earlier and are being brought to surgery before extreme degrees of dehydration and alkalosis are present.

Post operatively, it is common practice to start feeding the infant at two hour intervals as soon as it is conscious. This procedure has been questioned by Faber and Davis[11] who have shown in nine cases of pyloromyotomy that there is a gastric retention of dilute Barium for 20-29 hours post operatively. They conclude that post operative vomiting in pyloromyotomy is due to the too early introduction of food into the stomach. Better were it if the infants were treated with intravenous or subcutaneous fluids and on a feeding regime similar to laparotomies.

Despite the low mortality from the operative procedure, attempts are still being made to treat the syndrome medically. This is based on the theory that if the spasm phase can be relieved, the stenosis may not be severe enough to cause obstruction symptoms; and the hypertrophied muscle will disappear or correct itself after the third month. In the past, atropine has been the commonly used antispasmotic but its side reactions have precluded its use in that dosage has to be pushed to the point of poisoning before the spasm is relieved. Jacoby[12] divided fifty cases into two groups. One group consisted of twenty-six cases treated medically and the criterion for a case to be placed in this group was that vomiting must start in the fourth week or later and the infant must not be severely dehydrated. As an antispasmotic, he used Eumydrine which is a methyl nitrate salt of atropine[3] and which produces very little peripheral autonomic effects. The drug was used as a 0.6% alcoholic solution and given in a dosage of four drops 15 minutes before feedings four times on the first day, before three feedings on the second and third day and when vomiting had completely stopped, two drops were given three times daily for four months, at which time the disease had run its natural course. He also reduced the food intake to one ounce every four hours for infants weighing less than 6½ pounds and 1½ ounces for those over this weight point. The formula was used full strength and maintained at the low level of volume for 24-48 hours, after which time he increases the daily total volume by one-half ounce until the infant was taking its full caloric requirements.

The twenty-six cases so selected and treated stopped vomiting by the third day, regained their weight and progressed on a weight curve basis the same as normal infants.

Using the same procedure, I have treated three cases of hypertrophic pyloric stenosis with the exception that the Eumydrine was in a 1:10,000 aquaeous solution and the dosage was fifteen drops before each feeding. In case F. R. the infant started vomiting on the tenth day after birth. A diagnosis of stenosis was made three days later and twenty-six hours after institution of Eumydrine therapy, the infant ceased vomiting and presented no more symptoms. Cases L. B. and E. M. started vomiting of the projectile type 22-27 days postpartum, respectively. Forty-one and sixty-eight hours after institution of Eumydrine therapy, respectively, both cases ceased vomiting and went on to an uneventful recovery. They were on maintained Eumydrine therapy until the end of the third month. In all three cases the diagnosis was made early and dehydration did not present a problem. Here, then, we have an antispasmotic drug which gives promise of amelioriating the symptoms of stenosis. With this evidence in hand, all non-severely dehydrated cases, regardless of when the syndrome appears, should be treated medically for a period of 3-4 days in which time, if Eumydrine is going to work, the infant will stop vomiting. If the drug fails, nothing has been lost as the infant during the four-day trial period can be hydrated parenterally.

The second group of twenty-four cases were severely dehydrated and Jacoby feels that they are best treated surgically.

The mortality rate in both his groups being nil.

II. Intra-abdominal hernia, despite its rarety, is another condition which may give obstructive symptoms at any time from birth on. It is caused by a loop of bowel becoming incarcerated in congenital rents of mesentary, broad ligament or omentum.

Symptoms and findings are those of intestinal obstruction, and diagnosis is rarely made except by exploratory surgery.

III. Intussusception, while it usually occurs between the third and eleventh month, the peak of incidence is between the third and sixth months of life. There is usually a sudden, dramatic onset of vomiting and colicky abdominal pain in a previously normal, well developed infant. In 85% of cases, bloody stools are present and the infant appears in shock in 12-24 hours after the onset. In three-fourths of the cases, a palpable, sausage shape, non-tender mass can be felt in the right upper abdominal quadrant. Rectal examination may reveal the advanced portion of the bowel which feels comparable to the cervix uteri. X-ray examination need rarely be done as the history, symptoms and physical examination are almost pathognomic. If the condition is diagnosed and treated surgically within 24 hours after onset, the mortality rate is zero. However, as the time increment from onset increases, so does the mortality rate. Non-surgical reduction by colonic injections of Barium under fluoroscopic control as advocated by Stephens,[14] will in many early cases reduce the

condition and, hence, should be tried first before surgical intervention.

IV. Incarcerated hernia frequently produces reflex vomiting and has its highest morbidity during the first six months of life. Ninety-five per cent occur in males and 80% occur in the right inguinal canal or ring. The diagnosis and treatment are self-evident.

V. Peptic ulcer,[15] while extremely rare, occasionally is present at birth and may produce bloody vomiting. It is rarely diagnosed except at autopsy. Roentgenological studies may reveal the condition in the course of looking for other pathology. Treatment is by Sippy regimen.

VI. Meconium Ileus, meconium occasionally contains no bile or cholestrol because of bile duct obstruction and, hence, will be grayish white and putty-like in consistency. The infant may be unable to expel the material and will show typical signs of obstruction. Jaundice is usually present and the liver may be enlarged. Passage of a first clay-like stool (the meconium plug) with subsequent absence of stools make the diagnosis relatively easy. Mild laxatives may be used in an attempt to dislodge the fecal bolus but surgery must be resorted to to relieve the bile duct obstruction, unless, as in some cases, if due to inspissated bile and mucus that may be dislodged by medical means.

VII. Gastro-enteritis: The etiology of diarrhea[17] in the new born in epidemic or endemic form, still remains a debatable question. Is it a virus? Is it a streptococcus from an upper respiratory infection? Is it a food allergy? In the majority of case studies, the findings have been inconclusive. When in doubt, the virus category is the favorite waste basket.[18]

Vomiting, usually present, may be controlled by withholding foods and fluids for 24 hours and by the use of intramuscular sodium phenobarbital. After fasting 24 hours, a solution of 5% glucose in saline may be given orally in 30-60 cc. doses every 15 minutes, gradually increasing the amount by 120 cc. each succeeding hour. As the diarrhea may cause much base loss ond the vomiting much hydrochloric acid loss, parenteral Hartman's solution is of great value in combating the dehydration and correcting the ^{p}H imbalance.

As diarrhea is endemic in the southwest, and cultures routinely fail to give any clues, I use the slowly absorbed sulfa drugs which have decreased the average duration of a case from 7-10 days down to 3-4 days. The fact that these sulfa drugs work would indicate that we are probably dealing with a bacterial infection rather than a virus.

VIII. Rumination: Between the third and sixth months of life this is not an infrequent finding. It is easily recognized by observing the typical tongue and lower jaw forward and slight head extension attitude of the baby. The infant makes rhythmical chewing movement, bringing up food which is then non-forceably ejected or drooled from the mouth. Treatment consists in giving thick feedings or semi-solid foods, distraction of the child's attention and in severe cases where the weight curve starts declining, the use of a rubber ballon at the cardiac end of the esophagus after feedings.

SIX MONTHS TO TWO YEAR PERIOD

I. Infections: Any infectious or contagious disease usually has vomiting as an attendant symptom. The vomiting bears no relation to the ingestion of food and it is probably due to a heightened irritability of the vomiting center induced by the increased body temperature. Control of the symptoms is the same as elaborated upon under diarrhea above plus, of course, measures to lower the fever and direct treatment of the specific infection.

II. Habit: Following an attack of an infectious disease an infant probably, because of the attention it obtained by vomiting while ill, will continue intermittently to vomit with no apparent cause. Also, when there is a clash of wills between too over attentive parents and the child over eating, wetting or other behavior problems, the child will vomit as a resentment reaction. Proper advice to the parents relative to ignoring and making no fuss about the condition is the best therapy.

III. Intra-abdominal infections including Primary Peritonitis: Appendicitis, Meckel's diverticulitis, and mesenteric lymphadenitis may all produce vomiting as the only symptom apart from fever. Objective signs in the first two all point to an inflammatory reaction usually in the right lower abdomen. In mesenteric lymphadenitis, there is usually a history of previous upper respiratory tract infection. The white blood cell count is rarely above ten thousand and tenderness is not as marked or localized as

in the former two. Fever is low grade or absent and observation for 6-8 hours will usually reveal subsidence of symptoms. The vomiting need not be treated other than the withholding of food. Surgery is indicated in the first two conditions and chemotherapy in the latter.

Primary peritonitis[19] is seen following infection in some other part of the body, usually in the upper respiratory tract. The caustive organism is usually a hemolytic streptococcus or pneumococcus which is carried to the peritoneal cavity by the blood stream. Symptoms consist of vomiting, dehydration, restlessness, irritability, high fever, marked perspiration and diarrhea (in about 50% of the cases). The infant appears quite ill. The abdomen is soft and doughy feeling and moderate abdominal distention is present. Bowel sounds are usually absent. The white blood count runs between 20-50,000. A concurrent pneumonia may mask the abdominal pathology. However, a fast respiratory rate, absence of abdominal tenderness and a chest x-ray should make the differential diagnosis certain.

If one is sure the peritonitis is of the primary type, chemotherapy is best. However, if there is any doubt, it is better to resort to conservative surgery for diagnosis.

IV. Toxic: Vomiting from ingested, spoiled foods or poisons represents a toxemia initiated by extrensic factors. The vomiting is induced primarily by irritation of the vagal nerves in the stomach. Intrinsic toxemia such as is seen in uremia, ketosis or any disease condition markedly altering the blood chemistry by increasing the index of catabolic waste products, will induce vomiting by direct action of these products on the vomiting center. Elimination of the specific toxic substance is the treatment.

V. Recurrent vomiting: Into this catch-all is placed all types of vomiting that tend to recur at periodic intervals, usually between the ages of 1½ years and puberty. Unhappily, it is not a scientific definitive entity in that the etiological cause is varied and the only thing that all have in common is cyclic attacks of vomiting. Etiological causes around which much discussion still fans itself are:

(1) Infections of tonsils, teeth, mastoids, urinary tract, etc., which may cause decreased carbohydrate intake and resultant ketosis. Hypoglycemia is usually not present in this group.

(2) Hypoglycemia:[20] It is characterized by somnalence, ketosis, vomiting and convulsions. Attacks are precipitated by excessive play. In some children there appears to be an abnormally low blood sugar level between bed time and waking time. In others, low blood sugar per cents are found following a period of anorexia. Treatment is the introduction of dextrose into the system either orally if it can be retained or parentally. Yet, many cases do not stop vomiting after the hypoglycemia and ketosis have been corrected. Prophylaxis, however, will usually prevent the attack if the child is given rest periods and a glass of milk or stick candy between meals and at bedtime.

(3) Food allergies: Cases are reported wherein chocolate, peanuts, milk or almost any specific food precipitates attacks of vomiting whenever ingested. Elimination of the food from the diet prevents further attacks.

(4) Lesions of the gastrointestinal tract: Incomplete obstruction such as may be seen in malrotation of the intestines, chronic appendicitis, sliding types of intra-abdominal hernia and others may produce repeated attacks of vomiting and usually go undiagnosed until attention is focused upon the abdomen by acute findings of intra-abdominal pathology.

(5) Neurogenic:[21] Children and infants in this group usually have an unstable background. Family history reveals members with migraine, or neurodermatitis, or neurocirculatory asthenia and other psychothenic syndromes. Any nervous excitement or exhaustion precipitates the vomiting and in many instances, is preceded by headaches.

(6) Gastro enteroptosis: Talbot of Boston and others have repeatedly emphasized faulty body mechanics and visceroptosis as an etiological factor and claim excellent results with muscle education and abdominal supports.

Regardless of the etiology in recurrent vomiting, treatment of the vomiting and dehydration is of most importance during the attack. Rectal Bromides or intramuscular phenobarbital raise the vomiting center threshold of irritability and cause a cessation of vomiting. Ice chips and dry crackers ingested in small amounts are usually well tolerated and soft diet can be instituted 24 hours from the time the vomiting has stopped. A search for the etiological cause usually proves futile, however, and the treatment of the vomiting itself is usually all that is necessary.

SUMMARY

1. Vomiting has been shown to be the commonest major symptom of underlying pathology in infancy.

2. The disease syndromes in which this is true have been described and have been placed in chronological periods relative to the time of their appearance in the life of the infant.

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3. The general and specific treatment of the vomiting symptom complex (dehydration and alkalosis) has been discussed, including the general therapy of the underlying or direct causative pathology.

4. Two cases in which abdominal distention present in the infant at birth caused a soft part dystocia are described. The distention was due to intestinal atresia.

5. Three cases of pyloric stenosis are described in which the anti-spasmotic drug, Eumydrine, relieved the obstruction and its attendant vomiting, permitting the infants to retain and digest their feedings to the point that they were able to maintain their weight curves.

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MEDICAL OBSERVATIONS ON THE MANAGEMENT OF SHOCK

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WITH the increasing number of accidents in the homes and on the highways, physicians of all specialties are often called to treat patients suffering from shock; yet few physicians see shock in all its varieties of form and severity with sufficient frequency to gain wide experience and to formulate standard patterns of therapy.

During the recent war, combat casualties often developed the most profound shock. In the author's experience as a medical member of a team which devoted itself entirely to the treatment of shock, more than fifteen hundred such casualties were treated. Certain prognostic and therapeutic principles were learned which unfortunately are not observed in civilian medical practice. There is no desire to criticize present-day medical treatment of shock, nor the institution in which it is carried out, but rather this is a plea to recognize certain attendant difficulties and to suggest remedies—remedies which were learned by trial and error and by loss of life.

Presented before the Arizona State Medical Association, May 9, 1947

It matters little whether the offending agent be a piece of shall casing or of an automobile fender, a bullet or a splinter of glass. What was observed on the field of battle is seen again in civilian life—fractured bones, punctured lungs, bleeding vessels, crushed tissue or torn viscera. The denominators are common (trauma and shock) and the mechanisms and the treatment do not differ.

The treatment of shock, from whatever cause, is an emergency of the highest order. It is logical that shock may reach a critical point in duration and severity, beyond which no recovery can be expected. That critical time may, and often does, occur in the next five minutes. Our civilian emergency facilities, however, present the practicing physician with innumerable and often fatal delays—delays which we know by virtue of actual war experience can be prevented.

After the initial examination of a seriously injured and deeply shocked patient, various therapeutic measures are contemplated. Surgery with debridement and repair is, of course, the ultimate, but no procedure of an operative

nature is feasible until the state of shock is corrected. Alleviation of the shocked state is, therefore, first and foremost in any definitive care, for a live patient is both a prerequisite and a goal. Hemostats, splints, transfusions, vaseline gauze seals, oxygen, heat, water seals, gastric tubes with Wangensteen suction, novocain and sandbags, are a few of the many agents the physician may require immediately and simultaneously. Yet, when under ordinary circumstances he makes such requests of hospital personnel, confusion and chaos are the usual results. Precious time will be lost because of lack of preparedness, inexperience, and because of a fundamental failure to anticipate the emergency needs of the shocked patient.

In some institutions all transfusions must be typed and cross-matched before they can be given. Sometimes the blood is delayed in reaching the patient because it is cold and it is thought necessary that it be warmed. Blood substitutes offer only temporary and limited benefits, and it is generally agreed that there is no adequate substitute for whole blood. In many communities, however, countless unnecessary deaths occur from shock because no whole blood is available at all!

In the deeply shocked patient, any intravenous measure is exceedingly difficult for the peripheral veins are empty and collapsed. Vena puncture is impossible; yet precious minutes are frequently wasted probing for a vein—minutes that may mean a life lost in the hopeless attempt to insert a needle in the now only potential lumen of an empty vein. As a last resort, cutting down on a vein and inserting a cannula becomes the essential measure; still, a very small number of institutions have available sterile packs containing cannulas, ties, and the few necessary instruments, and further delay results as the material is assembled. The use of rubber gloves, preparation of a sterile field, and infiltration with novocain are standard procedures usually adhered to despite the urgency of the situation. After incising the skin over the vein, no structure of characteristic appearance is found; rather, a cord of tendenous nature may present itself, and this is in reality the collapsed vein. Failure to recognize this structure as the desired vein may lead to useless searching and loss of more precious time.

With the cannula finally in place, however, and the blood bottle attached, there will still be no gravity flow of blood in a case of severe shock. Measures to force blood into a dying patient are well known and simple, but frequently the apparatus is not immediately available; time is required for assembly; and the "next five minutes" has long since passed. Death due to shock may be the explanation to the family and is a legitimate cause of death, but death due to inadequate treatment is the true and illegitimate cause.

Oxygen may be ordered by the doctor, but in many hospitals the tank must be trundled from the basement, the valves set, the attachments placed and tested, and the first increase in oxygen in the inspired air is usually a considerable time after the first need for it was recognized.

Splints are common in the armamentarium of hospitals, but few institutions have splints actually ready for application. Delay results while gauze and cotton are laboriously wound around a splint.

Attempts to keep a dirty wound from being further soiled by employing sterile techniques for dressings or vaseline gauze seals are useless and waste more time. Adding a little dirt and a few organisms to a wound which will be debrided in a short time anyway can do no harm. Hence insistence on rubber gloves and sterile instruments to accomplish an emergency measure, such as clamping a bleeding vessel or sealing a sucking chest wound is unnecessary and results in further delay.

The common desire to salvage clothing rather than cutting it off is slow, necessitates moving the injured patient, and adds materially to the shock.

A water seal apparatus for the relief of tension pneumothorax is seldom ready for emergency use and assembly may involve lengthy description of the parts needed, search of the entire hospital, and long delay because of the lack of a glass adapter or other essential pieces. Failure to immediately relieve such increased intrathoracic pressure with attendant anoxia and circulatory embarrassment exerts an additive effect on the existent shock with a preventable but fatal result.

The patient who requires morphine will receive it by subcutaneous injection. Subsequently the doctor cannot determine the status of sedation of his patient because of diminished peripheral circulation and slowed absorption. Later, with improvement in the peripheral cir-

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culation, there follows rapid absorption and morphinism.

Blankets, hot water bottles, and shock blocks are usually ready for instant use, but blankets are not always placed beneath the patient as well as above. Too great heat is often applied, causing peripheral dilitation and a slow circulation, and elevation of the foot of the bed depends too often on the absent orderly.

There is a tendency to wish to operate an injured patient too soon: to regard the life-saving measures as capable of being carried out only in the operating room. Many operative and postoperative deaths occur from shock although the patient "looked pretty fair" before he went on the table. Continuous pulse and blood pressure records are rarely kept before the anesthetist assumes responsibility for the patient and often determination of the optimum time for surgery depends on a few isolated facts and the general appearance of the patient. The physiological phenomena of vasoconstriction, tachycardia, and influx of fluid from the tissues will often compensate for the still present decreased circulating blood volume; and with the advent of surgical trauma, the narrow margin of recovery from shock reveals itself by relapse.

The volumes of replacement therapy are often wholly inadequate. Although the patient may lose two quarts of blood and suffer from the shock of pain and crush and fracture, and although surgical repair will cause a further loss of from 800 to 1,500 ccs. of blood, it is often thought satisfactory to transfuse with only two or three pints of blood. Replacement with larger volumes is often regarded as dangerous, and, because deceptive partial recovery will usually result from this insufficient therapy, as unnecessary.

In military practice, it is felt that the dramatic responses continually observed and the low mortality from shock, even with the most destructive and severe wounds, were in part the result of rapid and comprehensive shock treatment. The patients studied and treated exhibited the characteristic picture of profound shock: the color was ashen gray, the skin cold and clammy, respirations shallow and slow, the consciousness gone. There was no perceptible pulse; heart sounds were distant or absent, and the blood pressure not detectable. Wounding had occurred an average of about four hours previously, and morphine sulfate and plasma had been given during this time with barely sustaining results. If left alone, death was a certainty in a matter of minutes.

A rapid examination of the patient would easily disclose the location and type of wound, the obvious physiological inbalances, and the severity of the shock. Extensive examination was not made iinitially; a glance was all that was necessary to disclose the urgency of the situation and therapy was started without further delay.

A shoe was removed, and without preparation or anesthesia, the skin incised over the medial malleolar vein. This vein was selected because of its constant superficial position and the usual remoteness from the sites of anesthesia and surgery. The empty white vein was teased free, incised, and a cannula inserted and tied. No attempt was made at blind vena puncture. The certainty of complete venous control thus assured by the use of a cannula permitted freedom of treatment not enjoyed when a needle lay precariously in the venous lumen.

The blood had been obtained meanwhile and, though ice cold and of universal donor O type, was pumped into the patient with a syringe and a three-way stop cock at about 100 ccs. per minute. It was surprising to observe the high pressure necessary to force blood into the collapsed circulation. When rubber tubes were used, they bulged like weak inner tubes, and all the strength that could be mustered in one's hands was necessary to force the plunger of the syringe down.

Meanwhile oxygen, which was instantly available, was started by a nasal catheter, since it was found that B.L.B. masks are poorly tolerated. The catheter was placed in the nose and forced down until swallowing resulted, and it was then withdrawn about one inch. The oxygen delivered at about six liters per minute, after passing first through water to humidify the gas and thus decrease local irritation in the nasopharynx.

The Trandelenberg position was immediately used in all cases except those with pulmonary embarrassment. Pillows or headrests were removed and the foot of the litter raised eight inches. This improved cardiac return and cerebral circulation, and aided in insuring free air passages. Any airway obstruction in the mouth or throat was relieved by insertion of a metal airway.

Sucking chest wounds were sealed with vaseline gauze slapped on with the bare hand. No

effort was made to lay the seal over the wound in a sterile manner; it was felt that relief of the complicating mediastinal flutter was of prime importance.

Tension pneumothorax was relieved immediately by inserting a needle in the third anterior interspace and connecting by tubing to a water seal jar, always held below the level of the chest. The needle was of large enough bore to prevent plugging and was secured by taping about it an old adhesive tape metal roll cylinder.

Hemorrhage was usually controlled by pressure dressings; little use was found for tourniquets. Open vessels were clamped with hemostats and then required no further attention. Bone bleeding was stopped by applying snipped pieces of adjacent muscle at the end of the fracture at the point of bleeding.

Splints, ready to apply, were used wherever indicated. Windlass traction was used cautiously to insure continued blood supply peripherally, and at pressure or traction points of force cotton padding was found satisfactory.

Levine tubes with attached Wangensteen suction were inserted in the stomach in all abdominal cases and in many chest cases. Placing two fingers in the posterior pharynx and manually forcing the tube posteriorly and in the midline provided an easy means of getting the tube in the stomach of an unconscious patient. Because acute gastric distention may cause cardiovascular embarrassment and commonly is present in abdominal or chest injuries, the Levine tube found widespread use.

Clothes were cut off. Any movement of the patient was avoided, for the delicate balance in favor of recovery is easily upset by position changes.

Morphine was given intravenously for immediate and determinable effect. No untoward reactions were experienced, there was no opportunity for delayed absorption, and full pharmacological action could be constantly and safely maintained.

Painful fractured ribs were infiltrated with novocain to increase respiratory excursions, relieve pain and decrease morphine dosage. Crushed chests with paradoxical respirations were splinted with sandbags or expanded with towel clips placed through the chest wall and maintained by traction.

Crushed and hopeless extremities were isolated from the rest of the body by tourniquets. The tourniquets were applied just below the optimal amputation site, and were not removed until the completion of surgical amputation. Damaged muscle apparently releases a substance of toxic nature, thought by the British to be Beta pyruvic acid, which may cause or aggravate shock; therefore, total and permanent blockage of venous and lymphatic returns becomes a necessity in the crush syndrome.

Blood pressure and pulse recordings were made every fifteen minutes and a running chart kept with the patient, where indicated temperatures and respirations were also determined. The information thus derived was of inestimable value in determining subsequent therapies.

After the initial 500 to 1000 ccs. of blood had been given, usually the syringe pump could be abandoned and the rapid rate of transfusion could then be maintained and regulated by increasing the air pressure in the blood bottle with air bulbs, short tubing, adapters and needles set aside for just that purpose.

Alkalies in the form of sodium citrate or sodium bicarbonate were given intravenously in sufficient dosage to guarantee a urinary P. H. of greater than 7. This was done to prevent crystallization of hemoglobin as acid hematin, or crystallization of sulfadiazine which might result in chemical nephrosis.

Penicillin, sulfadiazine, and tetanus toxoid completed therapy. The entire procedure utilized two trained laymen, one nurse and one physician working as a team. About one and one-half hours were necessary to prepare a patient for surgery, although initiation of therapeutic measures required minimal time.

Recovery was rapid and dramatic. The color and warmth of the body would return; the respirations would increase in depth and consciousness would reappear. A rapid and thready pulse and a low blood pressure could be obtained in fifteen to thirty minutes and gradually the blood pressure would rise and the pulse fall. With continued treatment, a mild transitory hypertension would usually result. The pressure might rise to 150/90, for example, and the pulse would be rapid, full and bounding. Rather than stop transfusion, additional blood was given and the pulse and blood pressure would both fall to relatively normal values. This prerecovery hypertension was explained as a vasoconstrictor phenomenon leading to increased pressure when the circulating blood volume

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approached normal, and it was a valuable prognostic aid.

No patient was abandoned to surgery because of persistent internal hemorrhage; rather, the rate of transfusion was increased to overcome the blood loss and the ensuing transitory recovery provided ample time and optimum conditions for surgery.

During surgery, observation and indicated additional shock treatment were carried out and post-operative relapses were watched for. Usually, however, when pre-operative preparation was adequate, surgery was well tolerated.

Huge amounts of intravenous replacement therapy were used; the average patient received from 1500 to 2000 ccs. of whole blood before surgery. It was not uncommon to prepare a patient with six to eight quarts of whole blood and one badly wounded soldier received 17 quarts of whole blood in ten hours—and survived! Plasma in like amounts was used for burn shock and presented no specific or particular problem. The necessary amounts of plasma were determined by bedside hematocrit studies. On the other hand, hematocrit studies provided no accurate index of the volume need for whole blood in cases other than burn shock.

When such measures as these were undertaken without the interminable delays resulting from inadequate preparation, deaths due to shock were minimized. Indeed, it was a rare patient who expired from shock despite the most severe injuries that could be encountered anywhere.

The successful treatment of shock under the most difficult conditions such as existed in military combat, certainly proves conclusively that with our modern hospitals and unlimited resources, comparable results can be obtained—indeed, it hardly seems too much to expect a superior rate of recovery. If physicians will insist on preparedness in our hospitals, if they will make emergency correction of obvious physiological imbalances, and if they will apply the principles that have been described, accidents will no longer be—as they are today—the greatest single cause of death in the United States.

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TORSION OF THE SPERMATIC CORD IN THE LEFT INGUINAL CANAL IN CRYPTORCHID

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THE first case of Torsion of the Spermatic Cord (testicle) was reported by Delasiauve in 1840*. Like our case, it proved to be torsion of an inguinal testicle operated supposedly as a strangulated hernia.

A Standard American[2] textbook on Surgery published in 1893 makes no mention of torsion of the spermatic cord (testicle) but does refer to "a retained testicle, especially if it is in the inguinal canal, is liable to inflammatory attacks and even to malignant change." Under treatment "various operations have been devised for placing and retaining such an organ in the scrotum, but all have been unsuccessful." Da Costa,[3] as late as 1904, made no mention of torsion of the testicle, but did state that its "late descent was often followed by hernia."

At the beginning of this century, torsion of the spermatic cord was considered a rare condition, Scudder,[4] in 1901, having been able to collect, after a review of the literature, only 32 cases. Young[5] (1926) stated there is a large literature on the subject which will be found well summarized by Sebileau and Descomps (1916). In 1916 Babcock,[6] in reporting a case of torsion of the spermatic cord in the scrotum, stated, "It was interesting to note that the correct diagnosis was considered and thought improbable." We wonder if the "growing literature" was as thoroughly reviewed by the profession generally as its importance warranted.

Today there is a fairly voluminous literature on Torsion of the Spermatic Cord and the case reports run into the hundreds,[11] yet, as stated by Ormund (1938),[8] "the individual practitioner meets it so infrequently that in a large proportion of cases it goes "unrecognized."

In 1942, Munroe Wolf[7] expressed somewhat the same idea, "the fact that the occurrence of

Presented before the Arizona State Medical Association, May 9, 1947.

this condition is more prevalent[10] than the earlier writers would have us expect, places an added responsibility upon the Urologist and the medical profession generally, because of the necessity for very early diagnosis and the immediate surgical interseption for conservation of the testicle.

The variance in the nomenclature has caused many cases of torsion to be classified as strangulation, gangrene, infarction, etc., of the testicle. This gives as added difficulty in compiling statistics from the literature, just as lack of interest of the physician in reporting his cases."

This last phrase gives us entree for our report, furthermore, so far as the profession in Arizona is concerned, we do not recall seeing the subject discussed in our State Medical Journal(s) during the past 30 years.

We are glad to have had access to the report of Ribeiro and Justus[8] (January, 1945), reporting from Sao Paulo, Brazil (translation) "Presentation of two more cases of torsion of the spermatic cord in ectopic testicle (inguinal canal) is fully justified by the relative rarity of communications with respect to the infrequency of the morbid condition." Their report brought the total number of cases reported in Brazil to 14. Also, we noted that the authors discussed the confusion of terms in their language (Portuguese) and that of the French, English, Italian and German writers.

It is not our intention to present a thesis, but we would like to introduce a few more pertinent facts before giving our case report.

Wolf has given us this definition: "Torsion of the testicle often designated as torsion of the spermatic cord is a condition resulting in a temporary or permanent, partial or complete, constriction of the blood supply to the testicle and its adnexa by a sudden verticle axis twisting of the testicular attachments (mesorchium, etc.) or spermatic cord."

Predisposing Cause of Torsion of Spermatic Cord

1. Undescended and imperfectly descended testicle.
2. Abnormally long post mesorchium and gubernaculum.
3. Absence of post mesorchium and gubrenaculum.
4. Very roomy tunica vaginalis.
5. Complete enclosure of the lower end of the spermatic cord, testis, and its appendages in the tunica vaginalis.
6. Long loose connections between the testicle and epididymis.
7. Abnormal attachment of the common mesentary (mesorchium).
8. Broad and flat cord.
9. Inversion, congenital non-rotation of testicle.
10. Anomalous vein to undescended inguinal testicle.
11. Testicle and cord unattached in the scrotum, post operatively, such as in older radical repair of hydrocele testis.
12. New growth of testicle.

After Munroe Wolf.

Exciting Causes—Torsion of the Spermatic Cord

1. Spontaneous, no apparent cause, while sleeping or at rest.
2. Muscular effort, such as straining when lifting a heavy object.
3. Peddling a bicycle.
4. Straining at stool.
5. Restraining oneself while falling.
6. Direct trauma to testicle, massaging an undescended testicle attempting to assist its descent into scrotum.
7. The application of a truss.
8. Attempts at reducing a hernia.
9. Approach of puberty, masturbation, and intercourse.
10. Athletic events.

After Munroe Wolf.

Two Types of Anomalies Associated With Descent of Testicle:

Undescended

1. Abdominal (those retained).
2. Inguinal (those retained in the canal).
3. Pubic (retained exterior).
4. Upper Scrotal (those retained in upper scrotum).

Maldescended (Ectopic)

1. On anterior surface external oblique.
2. In Scarpa's Triangle.
3. In perineum.
4. Transposed to opposite side.

C. T. Whittington.

CASE HISTORY FROM HOSPITAL RECORD

R. L. White, male age 14 years, school boy.

Diagnosis: Undescended testicle left with strangulated inquinal hernia. Right hydrocele.

Final Diagnosis (1) Torsion of testicle - cord and Tunica Vaginalis left. (2) Hydrocele right.

Family History: Father and mother living and in good health. An older sister and younger brother living and well; the younger brother had vertebral tuberculosis in infancy.

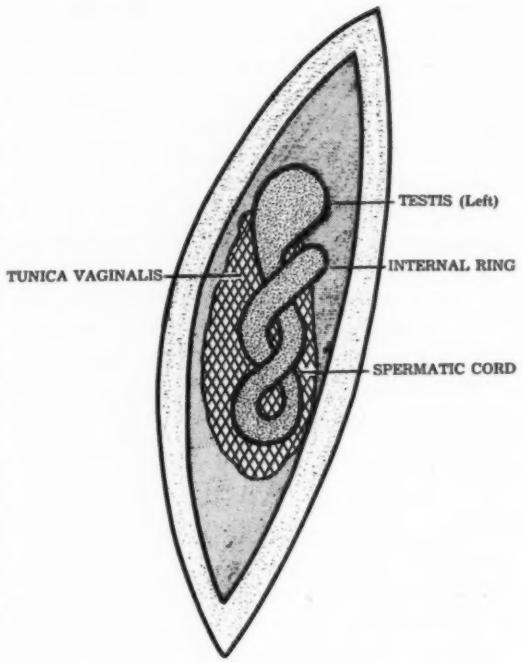
Personal History: Healthy, well-developed boy except for developmental anomaly: left undescended testicle, hydrocele right. The undescended testicle left was noted at Boy Scout examination May 17, 1946, and he was requested to advise his father. This he did, but its importance and possible complications apparently were not realized, at least, the family physician was not consulted. However, the boy had noted at least as far back as October, 1945 that he had had some pain in the left inguinal region at times. He would lie down and flex his left leg and rub this area, which seemed to relieve the condition. Several times he rubbed the area with Bangue. The pain was always in the left inguinal region, never on the right.

Onset and History: He had been in bed for a "cold" December 6, 7 and 8th, 1946. He was getting up to dress for school December 9th when he noted some pain in the left inguinal area, and went back to bed. Pain continued all day, he vomited once during the night; pain continued during the night, also, in the swollen area—"hernia testicle left inguinal canal." Seen by his physician 9:45 A. M. December 10th. Consultation at 11:45. Hospitalized and prepared for operation—diagnosis as above—could not get operating room until 4:00 P. M.

The pain in the left lower abdomen and inguinal region was "griping" in character, the area extremely tender so that a satisfactory examination could not be made. The Brazilian surgeons stated it thus, in Portuguese, "Nao permitindo que se tocasse no local"—would not permit one to touch it. The stethoscope revealed intestinal peristalsis above the internal ring, but none below. Temperature on admission—98°, pulse 68 (after morphine and hyoscine); Blood —RBC 4,670,000; WBC 9,100; Hbg 100%; Polys 70%; Lymphs 28%.

Operation—In spinal anesthesia.

Incision over left inguinal canal. The testis was found directly under the fascia, definitely under-developed, not too badly engorged; no other covering; the color of a ripe olive. The spermatic cord was thickened, vessels engorged, bluish black color, looped and twisted on itself (as shown in drawing), the "loop" being the most distal point in the inguinal canal and constricted by the rent in the tunica vaginalis. The cord was quickly revived by mobilization and



untwisting and freeing the tunica. Hot moist packs were used later to improve the circulation in the testis and cord, but were really not necessary. The testicle was free in the canal. It was with difficulty that it was covered by fashioning the tunica about it, because of the foreshortening of the tunica vaginalis due to a rent through which the testis had forced itself and caused the torsion and strangulation. A pouch for the testis was prepared by making a canal into the scrotum by blunt dissection down into the scrotum, using the fingers and gauze. After a tunica was fashioned about the testis, a stitch was placed in the guberaculum, the testis was placed in the scrotum and suture brought out through the opening in the scrotum through which a small clamp had been inserted to bring down the long suture ends. One end of the suture was threaded in a needle and passed subcutaneously and tied to the other end in the scrotum, anchoring the testis and its tunica in its new position in the scrotum. The cord was long enough to allow the testis to rest in the upper part of the scrotum without too much tension. The left half of the scrotal pouch was much smaller than the right, which was distended by hydrocele and testicle. A #00 chromic catgut was placed to close the external ring, also one distal to the internal ring which was found to be strong with no evidence of herniation of gut or omentum. The fascia over the inguinal canal was closed with fine chromic catgut, bleeding points ligated, clips applied to skin incision. The operation was considered a modified Bevan and revealed the futility and danger of

any attempt to replace the testis in the abdomen or reduce the "hernia" by taxis. It would have been an anatomical impossibility because of the strongly closed internal ring. We had the parents' permission to remove the testicle, but following the dictum of Wangensteen,[9] Ormund, Hiba and others, we endeavored to save it.

CONCLUSION

Our experience with one case does not warrant a conclusion. However, we were so favorably impressed with P. M. F. Bishop's report from Guys Hospital, London, 1945, based on a very extensive review of the literature, that we take the liberty of quoting his conclusion:

"1. Extracanalicular Testicle is a surgical problem.

2. The Canalicular Testicle is primarily an endocrine problem and should be treated surgically only after endocrine therapy has failed or when there is a complicating mechanical impedence.

3. The abdominal testicle is unlikely to respond to either method.

Maldescent is often found to be associated with other physical and mental congenital deformities."

And finally: Wangensteen[9] stated (1928): "Scrotal fixation of the undescended testis in its physiological position before the histologic changes incident to puberty occur, will enable it to develop normally," and Riba and Schmidlopp[11] in 1946 stated: "Acute torsion operated upon immediatetly or within eight hours will usually result in a viable organ."

FOLLOW UP

March 23, 1947—One hundred and three days post operative:

Examination and photograph—Examination shows the left testicle in upper portion of left scrotum and definitely enlarged; this is also shown in the photograph. The right testicle is also larger than at the time of operation, the hydrocele slightly reduced.

The patient received 10,000 units "Apoidin" (Anturatin "S" 500 Units), beginning the second post operative day, and continuing 500 units weekly.

April 10, 1947—Dr. Born examined. Testicle enlarged to three times the size it was at operation—not painful.

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HYDATIDIFORM MOLE FOLLOWED BY CHORIONEPITHELIOMA

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THE purpose of this paper is to present a case of hydatidiform mole that was followed by the development of a chorionepithelioma. Hydatidiform mole is a relatively uncommon disease, and chorionepithelioma is an exceedingly rare one. The literature on this subject indicates, in general, that once in each 2000 pregnancies cystic degeneration develops in part or in all of the chorionic villi. Chorionepithelioma is said to occur with a frequency between 1:5000 and 1:20,000 pregnancies. Approximately 50% of all chorionepitheliomas are preceded by a mole; 25% are preceded by abortion, and the remaining 25% are preceded by full term pregnancy. It has been noted that a latent period of a few months to several years occurs between the pregnancy and the appearance of chorionepithelioma. Mengert states that although approximately half of all chorionepitheliomas are preceded by hydatidiform moles, only 5 to 16% of moles terminate in chorionepitheliomas.

There is still much to learn concerning both these abnormalities of pregnancy, and, as so

Read before the Arizona State Medical Association, Tucson, May 9, 1947.

cogently stated by Novak, when one considers that even the normal trophoblast in an invasive tissue, and that in the so-called deportation of villi we have to deal with a species of what might be called "physiological metastasis," one can understand the difficulties in the study of the various types of growth springing from the trophoblastic covering of the chorionic villi, and especially in deciding as to their benign or malignant nature.

Regarding the pathology of hydatidiform mole, I again quote Novak freely, there is still a difference of opinion as to whether hydatidiform mole is to be looked upon as a degenerative or malignant lesion, though the latter seems more probable. To understand the pathology involved —a few remarks about the embryology of the developing ovum are in order. Normal chorionic villi and their covering trophoblast begin their development from blastocyst soon after the fertilized ovum enters the uterine cavity.

The surface of the blastocyst, at first entirely smooth, now develops polypoid projections, the so-called trophoblastic buds, at first quite solid but later penetrated by a core of mesenchyme, forming the early villi. The single layer of cells of the primitive chorion soon shows a differentiation into two layers. The inner of these is made up of a single layer of clearly defined cuboidal cells. It is spoken of as the layer of Langhans. Outside this is a ribbon of cytoplasmic tissue, with no differentiation into cells, but with a layer of dark staining nuclei placed at rather close intervals. This is the syncytium. The two layers together constitute the trophoblast. With the development of the trophoblast the egg is ready for implantation into the uterine mucosa. This occurs as a burrowing process whereby the mother's blood stream is tapped for nutrition.

The three pathological changes which characterizes hydatidiform mole are: (1) Trophoblastic proliferation involving both the Langhan layer and the syncytium. (2) Hydropic degeneration of the villous stroma, and (3) Scantiness of blood vessels. The chief distinguishing feature of chorionepithelioma, on the other hand, is the invasion of the uterine wall, not only the blood channels but the musculature, by trophoblastic cells, advancing in bulk with destruction of uterine tissues accompanied by coagulation, necrosis, and hemorrhage.

The chief clinical feature of hydatidiform mole is the appearance of uterine bleeding, usually at some time between the 3rd and 5th months of pregnancy, together with the enlargement of the uterus beyond the expected size from the assumed duration of pregnancy. The spontaneous expulsion of vesicular tissue often occurs and of course makes the diagnosis complete. The absence of fetal heart tones and fetal movements when these signs are normally present are all of great diagnostic aid. Many times the patient presents a toxic picture with edema, hypertension and urinary findings characteristic of the toxemias of pregnancy. A most important diagnostic aid when hydatidiform mole is suspected is the quantitative biological test of pregnancy, namely the Ascheim-Zondek test or one of its modifications. These tests are based upon the fact that normal living trophoblast produces a gonadotropic principle which finds its way into the maternal blood and urine, so that injection of the latter into certain laboratory animals produces characteristic changes in the ovaries of the animal. In view of the fact that in both hydatidiform mole and chorionepithelioma there is an excessive amount of trophoblast, it naturally follows that in these conditions there is an abnormal amount of gonadotropic principle produced. It must be emphasized, however, that a positive A-Z test in high dilution is not pathognomonic of hydatidiform mole or chorionepithelioma. This valuable test must be combined with thorough clinical and pathological study of the individual case.

We have mentioned the chief clinical features of hydatidiform mole. The most frequent, though not always the first symptom of chorionepithelioma, is the appearance or the continuance of bleeding after the evacuation of a mole or after full term pregnancy, or miscarriage. As has already been said, there may be no evidence of the malignancy for a long time after any of the above mentioned events. Moreover, the first indication of the disease may be the appearance of metastasis in one organ or another, especially in the vagina or vulva, but often in distant organs as the lungs or liver. With the extension of the uterine disease, bleeding becomes increasingly profuse, with the development of anemia, sepsis, and cachexia; terminating in death.

REPORT OF A CASE

Mrs. A. K., a 23-year-old gravida 2 was sent to me by Dr. John F. Stanley of Yuma, Arizona. She was first seen March 18, 1946. Her LMP began December 1, 1945 and she was, therefore,

considered to be approximately three months pregnant. This patient has one child, living and well, and 11 months old at that time. She has had the usual childhood diseases and has undergone no major surgery. There have been no miscarriages.

Her chief complaints was a persistent brownish vaginal discharge since January 1, 1946, headache, and fatigue.

Upon physical examination the BP was noted to be 180/100. There was moderate edema of the ankles. On abdominal palpation the fundus was found to be approximately 2 cm. below the umbilicus. No effort to obtain fetal heart tones was made as the patient was only three months pregnant according to her menstrual history. And it was only in retrospect that it was realized that the uterus was larger than it should be for the assumed length of pregnancy. The diagnosis was considered to be early pregnancy complicated by threatened abortion, and severe toxemia with an associated nephritis.

The initial vaginal examination revealed a lacerated, patulous, external os of the cervix from which was exuding a slight brownish discharge.

A voided specimen of urine revealed a Sp. Gr. of 1.027, Albumin 2 plus, 3 RBC's, and 10-15 finely granular hyaline casts per h.p.f.

The patient was sent to bed and progestin therapy was started.

On March 27th, 9 days later, the patient began bleeding profusely and after several hours finally passed a large hydatidiform mole. Before the expulsion of the mole the BP rose to 190/120. Much difficulty was met in finding a hospital bed for this patient, but she was finally hospitalized about 12 hours after the above mentioned episode. Her admission blood count revealed a 2,800,000 R.B.C. with 7.5 gms. or 47% Hb. The patient received a 500 cc. whole blood transfusion on the day of admission, March 27, 1946, another on March 28 and a third on March 29. The patient's general condition improved remarkably although edema of the face, hands and ankles persisted, as did the moderate, bright red vaginal discharge. The BP stayed around 150/90.

On March 1, 1946 a D & C was done. The uterine cavity was thoroughly swept around with the examining finger and considerable blood and filmy material was removed with ring forceps. Bleeding was brisk, but was controlled with uterine pack and ergotrate.

The microsopic findings in this material was described as "considerable masses of decidual tissue and blood clot are present with a few small bits of endometrium. No definite chorionic villi are found." Diagnosis: Decidual tissue.

The patient's general condition seemed to improve somewhat but a bloody vaginal discharge persisted. This discharge was not bright red, but of a pale, tomato sauce color. The patient was discharged on April 8, 1946.

The patient did fairly well at home, although some spotting of blood occurred each day. On March 23, 1946, a sudden profuse hemorrhage occurred; on March 25, 1946 a Friedman modification of the A-Z test was strongly positive. No quantitative test was done. The patient was rehospitalized March 26, 1946. Her blood picture on admission was RBC 3,700,000 with 75% Hb. Another D & C was done on the day of admission. The cervix was 1-2 cm., dilated, and with a dull curette considerable black blood and necrotic tissue was removed.

The microscopic description of this material was, "This tissue consists almost entirely of blood clot and necrotic tissue—small bits of endometrium are present and there are a few small groups of syncytial cells. There is no evidence that this is a hydatidiform mole." Diagnosis: Necrotic tissue.

Following this D & C a slight bloody vaginal drainage persisted, but the patient felt fine and was sent home March 29, 1946.

During the next four weeks the patient was up and about her house. She felt fairly good, but complained of fatigue, a slight to moderate bloody discharge persisted. On May 16th an A-Z test was still strongly positive. Pelvic examination May 24th revealed the uterus to be somewhat enlarged and boggy. In view of the above findings and after competent consultation, the tentative diagnosis of chorionepithlioma was made, and the patient was rehospitalized for the third time, for a hysterectomy. She was admitted May 28, 1946. Her urinalysis was normal. The RBC was 3,400,000 with 58% HB. She was given a total of 1500 cc. transfusion before, during, and following the operation.

A total hysterectomy and appendectomy was done May 31, 1946. Both ovaries were entirely normal to gross examination and were not removed.

The patient's post operative course was uneventful. She was discharged on June 10, 1946, 10 days after surgery. She was afebrile, and ambulatory on discharge. There was no vaginal bleeding and the RBC was 4,800,000, 13 gms. 84% HB.

TISSUE REPORT

Gross: Specimen consists of a uterus measuring 10.0 x 8.0 x 3.5 cms. It has been opened and it shows large areas of necrosis and hemborrhage of the mucosal surface. The wall is not unusual in appearance. The cervix is slightly eroded in areas.

Microscopic: Sections through the involved areas of the endometrium show a large blood clot with a surrounding decidual reaction and numerous scattered syncytial cells. In one area there is a diffuse growth of epithelial cells derived from the Langhan's layer. In addition the syncytial layer is still present, and there is

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an abortic attempt to form chorionic villi. One area of involvement of the musculature shows a few syncytial cells within blood channels. The syncytial hyperplasia is fairly diffuse throughout the wall occurring in scattered, small groups of cells with two to three in a group.

Pathological Diagnosis: Chorionepithelioma of the uterus.

During the 11 months following hysterectomy, this patient has enjoyed the best of health. A Friedman modification of the A-Z test was negative for the first time June 24, 1946, and again on October 3, 1946. On April 1, 1947 a frog and A-Z test were negative as was an x-ray of the chest.

SUMMARY AND COMMENTS

A case of hydatidiform mole followed by the later development of chorionepithilioma is presented. The classical clinical findings of vesicular mole were present, but the diagnosis was not made until the actual passage of the mole. An early quantitative biologic test for pregnancy would have been of great assistance in making early diagnosis.

The description of the mole itself or of the currettings in no way indicated the possibility of later development of chorionepithelioma.

Dr. Hertig of Boston, in a very excellent paper in American Journal OB & Cyn., January, 1947 reported on a series of 200 moles with a 95% follow-up on the patients. The purpose of his investigations was to determine what, if any, correlation exists between the histologic appearance of a hydatidiform mole and the subsequent clinical course of the patient with respect to the development of chorionic malignancy. His conclusions are that there is a marked, but not an absolute correlation between the degree of apparent molar malignancy and the tendency of the patient to develop some grade of chorionic malignancy.

In the case reported in this paper the characteristic clinical findings most frequently associated with chorionepithelioma, namely, persistent vaginal bleeding following the expulsion of a mole, a full term pregnancy or an abortion, was present. In addition, the A-Z test remained persistently positive.

The patient was treated with total hysterectomy and complete recovery followed. The ovaries were not the seat of lutein cysts which are reported to occur in 50% of such cases.

The pathological report on the extirpated uterus was chorionepithelioma.

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THE MALICIOUS POISONING OF WATER SUPPLIES AND ITS DETECTION

ROBERT A. GREENE, and
EDWARD L. BREAZEALE*

FROM time to time, poisoning of water supplies, used for human or animal consumption, has been suspected. With a very few exceptions (chiefly cases of accidental pollution of water from mines using the cyanide process, or pollution of underground water supplies by industrial wastes) we have not found any evidence that poisons had been maliciously added to a water supply.

Since the usual scheme of toxicological examination is time consuming, we have studied the poisons which might be accessible through the usual commercial channels and which might be used for this purpose, as well as those materials which may be eliminated by reason of slight solubility in water. The detection of poisons in water is much simpler than in the presence of organic material, and many of the materials may be detected by physical examination. Many poisons are insoluble in water since the presence of ions normally present in water will precipitate many of the more common poisons.

The discussion which follows will deal with the poisons which may be used, and their detection. For quantitative determinations, reference should be made to standard texts on toxicology.[1, 2, 3]

The More Common Poisons

Webster[1] has given a classification of poisons which has been abridged as Table I. Those which are readily available through the usual commercial channels and which might be expected in cases of malicious poisoning are italicized:

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TABLE I

INORGANIC POISONS

Corrosives
Acids and *Alkalies*
Non-Metallic Poisons
Halogens, *boron*, *phosphorous*
Metallic Poisons
Ag, Al, As, Ba, Bi, Cu, Cr, Hg, Mg, Mn, Pb, Zn, $KClO_3$, KNO_3, $KHC_4H_4O_6$
Gaseous Poisons
AsH_3, CO, CO_2, H_2S, PH_3. War gases (Mustard, Lewisite, Adamsite, etc.)

ORGANIC POISONS

Alkaloidal Poisons
Strychnine, *nicotine*, coniine, etc.
Non-Alkaloidal Organic Poisons
Parrafin hydrocarbons, halogen derivatives, alcohols, aldehydes, *cyanides*, etc.
Benzene, *phenol*, *cresol*, salicylic acid and derivatives; aniline, acetanilid, nitrobenzene, etc.

Thallium compound should be added to the list of metallic poisons since the salts, especially the acetate have been used for the extermination of rodents.

An inspection of Table I reveals that of the known poisons, those which might be expected in the malicious poisoning of water are very few. These which might be expected are given in Table II along with the average dose (taken from the U. S. Pharmacopaeia XI,[4] Merck's Index, 5th Edition[5], or Clinical Toxicology[6], the average fatal dose (taken from Webster[1]) and a figure showing the fatal dose expressed in parts per million based upon an estimated water intake of 250 ml. as a single dose or 2500 ml. total daily intake.

Frequently, there have been livestock losses which have been attributed to poisoned water supplies. An attempt was made to set up a similar table of average therapeutic and lethal doses for animals. This has not been possible because of the lack of data regarding lethal doses and the normal water intake, due to the grazing habits of animals. It would be expected, however, that lethal doses for different animals would vary as do the therapeutic doses. Milks[7] gives the relative therapeutic doses for the more common animals as:

Horse	1	Swine	1/8
Cow	1½	Dog	1/16
Sheep and Goat	1/5	Cat	1/32

It must be remembered that the average therapeutic doses for larger animals may be of the same order of magnitude (or even greater) than lethal doses of the same poison for man.

Suggested Laboratory Procedures

When a sample of water is received in a case of suspected poisoning, a preliminary analysis

TABLE II
Average Therapeutic and Fatal Doses of the More Common Poisons

POISON	Average Dose Grams	Average Fatal Dose (Grams)	Single Dose (250 cc.) ppm	Daily Consumption (2500 cc.) ppm
Sodium Fluoride	0.005-0.03	10.0	40,000	4000
Sodium Borate (or Boric Acid)	0.75	15.0	60,000	6000
Potassium Chlorate	0.25	14.0	56,000	5600
Potassium Bitartrate	2.0	125-200	500,000—800,000	50,000—80,000
Potassium Nitrate	0.3	8-30	32,000—120,000	3200—12,000
Alum	0.3-1.0	30	48,000	12,000
Zinc Chloride	0.006-0.02	3.5	14,000	1400
Lead Acetate	0.03-0.25	25-30	100,000—120,000	10,000—12,000
Mercuric Chloride	0.004	0.1-0.18	400-720	40-72
Bismuth Subnitrate	1.0	7-23	28,000—92,000	2800—9200
Arsenic Trioxide	0.002	0.22-26	880-140	88-140
Antimony as Tartar Emetic	0.003	0.650-1.30	2600-5200	260-520
Thallium Acetate	0.1-.2		More than 800	80
Nicotine	0.0025	0.06	240	24
Strychnine Sulphate	0.002	0.10-0.12	400-480	40-48
Potarrium Cyanide	0.004-0.015	0.154	610	61

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may give much valuable information. Physical examination will eliminate many possibilities. If the sample is colorless, copper, chromium and manganese can be eliminated. The odor will detect the presence of paraffin hydrocarbons, alcohols, halogen derivatives, benzene, etc.

If the pH does not vary greatly from neutrality, corrosive acids and alkalies may be eliminated. If the sample is acid, there is little possibility of the occurrence of cyanides. (Due to volatilization.)

Total solids are determined according to the directions given in Standard Methods of Water Analysis[8], or by a modified conductivity apparatus as used for determining soluble salts in soils.

If the quantity of total solids does not exceed 1500-2000 ppm., the probable toxic materials will be zinc salts, mercuric chloride, arsenic, antimony, nicotine, strychnine, cyanides and thallium.

If the total salt content exceeds this amount, it is advisable to make a routine chemical analysis before proceeding with tests for poisons since it is not uncommon, (particularly in arid regions) to find normal waters of high salt content. For this purpose, we have employed a rapid method which gives satisfactory results. Carbonates, bicarbonates and chlorides are determined volumetrically on the same sample using N/50 H_2SO_4, and a solution of $AgNO_3$ of such strength that 1 ml = 1 mg Cl. Phenolphthalein and methyl orange are used as indicators and after carbonate-bicarbonate determination, a few drops of potassium chromate are added and the chlorides are determined. Sulphates are determined either turbidimetrically or volumetrically by either the benzidine hydrochloride or the tetrahydroxyquinone method. Nitrates are determined colorimetrically by the phenoldisulphonic acid method and calcium and magnesium by a soap titration method. Sodium is calculated by difference.

When the total salt content is low, tests may be made directly. We have found that the Reinsch test[3] is very satisfactory for the detection of arsenic, antimony and mercury. A strip of bright copper foil is placed in an evaporating dish which contains the solution to be tested with c. p. HCl in the proportions of 6:1. The solution is boiled for a few minutes. The appearance of a black, shiny deposit upon the strip indicates the presence of arsenic or antimony. Mercury gives a white deposit. We have been able to detect 0.1 mg As_2O_3 and 0.3 mg. $HgCl_2$ in 25 ml of water. (4 and 12 ppm. respectively). Strongly positive tests are given by 0.4 mg. As_2O_3 and 0.5 mg $HgCl_2$. These values correspond to 16 and 20 ppm. respectively. The appearance of a black metallic deposit does not necessarily indicate arsenic since antimony salts give the same reaction. We have been able to detect 0.2 mg $SbCl_3$ (8 ppm) by these tests. If the test gives a positive result, then the element must be identified by other tests (See Webster). A negative test, however, proves the absence of significant amounts of heavy metals (arsenic, mercury and antimony).

There are several tests for alkaloids; but we have found that Mayer's reagent[1] gives very fine results with several of the more common alkaloids. Although we have not been able to try the test with known amounts of nicotine, we have been able to detect 0.4 mg of strychnine sulphate in 10 ml of water (40 ppm).

If preliminary tests suggest the presence of alkaloids, these may be extracted by suitable solvents and identified by suitable tests[2]. The scheme of toxicological analysis given in "Laboratory Methods of the U. S. Army" is recommended[13]. Final identification can be made by methods given in "Methods of Analysis."[3]

There are several methods available for the determination of cyanides, but many of these are non-specific. We have discussed these elsewhere[9] and we find that the method of Fox[10] is the most satisfactory. The test is carried out as follows:

Place 250 ml of the sample in a flask and acidify with tartaric acid, connect the flask with a small test tube to which has been added one drop of 5% KI solution, and one drop of 0.001 M $AgNO_3$ and 1 ml of 5% KOH solution. The HCN is aspirated into the opalescent suspension of Ag I. If cyanides are present, the KCN which is formed in the test tube will dissolve the Ag I, rendering the solution clear. Using a sample of 250 ml, we have been able to detect 0.5 mg of KCN (2 ppm).

The reactions of thallium are, in general, similar to silver. The most common compounds which are slightly soluble are TlCNS, TlCl, TlI, Tl_2CrO_4. We have found that the solubility of the two former are relatively great (more than 1000 ppm). When a few drops of K_2CrO_4 are added to 5 ml of thallium sulphate solution, we were able to detect 100 ppm; when KI is added

to another 5 ml portion, we could detect 25 ppm. If the KI test should indicate the presence of thallium, a suitable quantity of the sample should be concentrated. Thallium is then precipitated as the chloride, which is separated from the chlorides of silver and mercury by washing the precipitate with hot water. Lead is removed by converting it to the sulphate, which is filtered off, and the iodide or chromate tests are applied to the filtrate.

Barium carbonate, which is extensively used in rat poisons, has been purposely omitted from Table II because of its slight solubility in water, as well as the fact that most waters contain sulphates which would precipitate barium as the sulphate. Phosphorous has also been omitted because of its slight solubility.

The tests which have been described might be applied to any water. If these are negative, and if the salt content exceeds 1500-2000 ppm, it will be necessary to test for other elements. Since the toxic doses of the other materials given in Table II are fairly large, these may be detected by the usual qualitative tests. These are given by Webster[1] and many textbooks of qualitative analysis, so the technic will not be given here, with exception of a few tests, which have given very satisfactory results:

Lead. Add to 10 ml of sample in a test tube, a few drops of KI or K_2CrO_4 solution. The former will detect 300 ppm of lead acetate; the latter 100 ppm. (3 mg and 1 mg per 10 ml.)

Bismuth (Engelder[11]). A drop of the sample is placed on a glass slide or test plate. A small crystal of KI and of cesium chloride are added. The formation of a blood red precipitate indicates the presence of bismuth. This test will detect bismuth in one drop of a solution containing 1 mg. Bismuth citrate per ml (1000 ppm).

Fluorides. The following method gives very satisfactory results. Titrate a sample of the water with N/50 HNO_3, using methyl orange indicator. To a 50 ml of the sample in a Nessler tube add sufficient N/50 acid to bring it to the methyl orange end point. Then add 10 ml of NH_4CNS solution (24 grams per liter) and 5 ml of $FeCl_3$ solution, which contains 0.075 mg per ml. Mix well. At the same time, prepare a control from 50 ml of distilled water. The presence of fluorides is indicated by a rapid bleaching of color. According to Smith[12], the following ions interfere when present in the amounts in excess of those shown in parenthesis: nitrates (200 mg in sample), chlorides (500 ppm), sulphate (125 ppm), phosphate (0.2 mg in sample).

Zinc. The qualitative test given in "Standard Methods of Water Analysis"[8] is very satisfactory. "Acidify the clear water in a 20 x 150 mm Pyrex tube two-thirds full, with sulphuric acid (1.1) and add 1 ml of a 10 percent potassium ferrocyanide solution. A white precipitate or opalescence will form if zinc is present."

DISCUSSION

In our experience, we have encountered few cases of malicious poisoning of water supplies. Few materials are generally available which, when added to the water in lethal doses, would not impart a disagreeable odor or taste. Another difficulty is that the poison must be present *in solution* or suspension in relatively large amounts in order to be effective. With the possible exception of cyanides, practically all other toxic agents, when present in significant amounts, would impart a taste, or color which should arouse suspicion.

The tests which have been described are very useful for eliminating the possibility of toxic substances. If they are found, then quantitative determinations should be made. In applying these tests, we have kept in mind the necessity of a required sensitivity well below the toxic limit, and, whenever possible, within the usual therapeutic dose.

Although it is admitted that these various toxic substances should not be present in water, on the other hand, if they do occur, it must be proved that they do occur in sufficient quantities to be injurious.

When laboratory animals are available, the presence or absence of any toxic material may be demonstrated by giving a portion of the sample to an animal. If a poison is present, the symptoms shown by the animal may give a clue as to its probable identity. Also, with due caution, tasting the water may also suggest the identity of some of the toxic materials. The average person cannot taste much less than 1000 ppm of dissolved salts, with the exception, of course, such substances as strychnine. If a small amount of the sample is tasted, then promptly expelled from the mouth, and the mouth rinsed out with water or a mild mouth wash, there is little possibility that enough material might be absorbed to produce any injurious effects.

Fortunately, the malicious poisoning of water

is very uncommon, and even when attempted, it is usually unsuccessful, due to such limitations or the availability of a toxic material, its solubility in water, and the fact that a lethal amount will usually betray its presence by odor or taste, as well as the probability of dilution (especially in running water).

Suggested Scheme of Examination

When the sample is received, make a physical examination. Note color and odor (cold and hot), pH, taste (*caution*).

Determine total solids gravimetrically or by conductivity methods. If less than 1500-2000 ppm, all poisons except zinc, mercury, arsenic, antimony, thallium and cyanides can be eliminated.

If the total salt content exceeds 2000 ppm, determine the following quantitatively: Ca, Mg, Cl, SO_4, CO_3, HCO_3, NO_3. Many waters naturally contain large amounts of soluble salts. Check presence or absence of toxic substances by giving some of the waters to a laboratory animal.

The preceding tests usually give some clue as to the probable identity of the poison (if present). Specific qualitative tests may be employed to show the presence or absence of the poison.

SUMMARY

The possibility of malicious poisoning of water has been discussed.

The probable toxic materials which might be used are named, and the concentrations are given which are necessary to produce injurious effects.

A scheme of analysis is suggested which, although not all inclusive, may be employed for the detection or elimination of the more common poisons.

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MISCELLANEOUS SECTION

Forcing Socialized Medicine on America By the Use of Federal Employees and Government Money

Address by HON. FOREST A. HARNESS,
Representative in Congress from
Fifth Indiana District

Mr. Chairman and Gentlemen:

I am particularly happy to be with you this evening, because I am acquain ed with the great fight this organization has waged in behalf of free medicine, as distinguished from that type of Socialized Medicine which we now find in every country in which dictatorship prevails.

The brand of dictatorship makes no difference—Communism, Fascism, Nazism, Socialism—all are alike, in that they enforce a system of State Medicine, or Political Medicine, as I prefer to call it.

Whatever the name of the dictatorship, or whatever the pattern of the particular brand of collectivism in a given country, the system of socialized medicine is always pretty much the same. It is based on compulsion, and is generally administered by a nation-wide system of ward and precinct politics.

But Socialized Medicine is not for free America, and I am happy to congratulate you gentlemen on the great fight you have made during the last ten years to head off this unwholesome campaign in Washington.

If the medical profession and all our hospitals can be taken over by the federal government and

forged into a new and gigantic health bureaucracy, then it would only be a question of time until Washington likewise moved into the field of education, religion, the press, the radio.

Freedom soon would be in total eclipse.

That must not come to pass in mighty America, the last great citadel of freedom and liberty on the face of the globe today.

Heartened by Physician Support

Ours is a great responsibility to hold aloft the bright torch of freedom and honest representative government. And it has been most encouraging to know that we have the great body of the American medical profession standing behind us in this effort in Congress, as this meeting tonight so clearly indicates is the case

Approximately five months have passed since our special sub-committee was established to investigate publicity and propaganda in the Executive Agencies. We are a sub-committee, as you know, of the standing legislative Committee on Expenditure in the Executive Branch.

Our special interest has been the techniques of government propaganda by which our federal bureaucrats perpetuate themselves in office, generate pressures on Congress for more and bigger appropriations, and sponsor socialistic enterprises in the name of national emergency or an artificially stimulated public demand.

More than six solid weeks of our investigation has been devoted exclusively to the so-called Health Work Shops set up throughout the country under the aegis of the U. S. Public Health Service, the Social Security Board, the Children's Bureau and several other agencies having an oar in the administration of health and welfare programs.

The amazing ramifications of the federal propaganda in behalf of Socialized Medicine have astonished me. How much of our total appropriations for health and welfare are being diverted to this sort of high-pressure propaganda, we do not yet know. But we do know that the amount is considerable. And before our inquiries are concluded, we shall hope to present for public consideration an itemized account of the total diversion of federal funds for this propaganda campaign. In that accounting we shall include a considerable item for foreign travel to New Zealand, England, South America and Japan. For we now know that our health bureaucrats are interested in Socialized Medicine not only in the United States but in every other land in which they can find an opening.

Before enlarging on the details of the Health Work Shops inquiry, I should like to give you an over-all picture of the federal publicity operations, as we have measured them to date.

Seventy-five Million Dollars

We began with a special report from the Budget Bureau which showed that the various federal agencies spent $74,829,467 for publicity and propaganda work of every kind and description.

An earlier study, covering the fiscal year 1941, showed total publicity expenditures of the federal establishment at only $28,000,000.

Now everybody in Washington recognizes that certain information services are an essential part of any institutional operation. But Congress insists that there is a clear line of distinction between legitimate information services and those additional operations which tend to build up public opinion in favor of more projects, broader programs, or federal invasion of new spheres of public service. It is primarily the latter operations which our sub-committee seeks to itemize as to cost and scope. It is my contention that, at least, the people are entitled to know how much they are spending to educate themselves to more spending.

Huge Public Relations Staff

In the Department of Agriculture, Committee investigators found 525 persons engaged in public relations work. Salaries ranged from $10,000 down to $1,888 a year. But only 204 members of this robust information staff were in Washington. The rest were found in Department of Agriculture branch offices in Boston, San Francisco, Milwaukee, Ralaigh, Dallas, Denver, Albuquerque, Philadelphia, Ogden, Chicago, Atlanta; Juneau, Alaska; San Juan, Puerto Rico—and eight lesser cities throughout the States and Territories.

Total budget estimates for Agriculture's Office of Information for the fiscal year beginning July 1, 1947, were $2,307,000, an increase of $335,350 over the previous year. But this does not include printing or mailing expenses.

Every known media of intelligence is utilized by Agriculture. The Office of Information prepared 1,998 press releases in the nine months ended April 1—an average of 11 every working day. During the same months, the office pre-

pared 837 radio scripts, including several network programs. The radio time contributed for these programs normally has a commercial value of more than $500,000 a year. The same nine months saw 17 new motion picture films released through the department's film stations.

For the 1947 fiscal year, Agriculture's combined printing bill—all bureaus, divisions and offices—will be $2,260,784, exclusive of mimeographing processed within the department.

Spenders for Publicity

These activities begin to explain why the Government Printing Office, which occupies 33 acres of floor space in Washington and employs 7,900 full-time workers, still can't keep up with government printing demands.

Some of the principal spenders for publicity in fiscal '46 were:

Department of State	$30,377,000
Treasury	11,104,800
Department of Agriculture	9,295,700
Office for Emergency Management	8,154,021
War Department	5,715,690
Office of War Information	3,772,095
Office of Price Administration	2,572,000
Office of Petroleum Administration	2,572,000
Federal Security Agency	2,043,988
Department of Commerce	2,003,212
Department of Labor	1,440,641
Navy Department	704,000
Veterans Administration	660,571
Tennessee Valley Authority	245,000
Post Office Department	11,960

My distinguished colleague, Rep. Richard B. Wigglesworth, of Massachusetts, long has been a crusader on the Appropriations Committee against excessive public relations expenditures within the federal establishment. He expressed astonishment at the 1946 tabulations I have just quoted.

"In my opinion," he said, "the enormous governmental propaganda set-up is not only a gross waste of the people's money, but, over and beyond that, makes for the destruction of the proper exercise of the legislative functions of the Government."

With that, of course, we are all in full agreement.

Social Security Spending

You will note that the Social Security Board has been spending about $2,000,000 a year in public relations activities—regardless of whether we call it publicity or propaganda. We do not yet know the full scope of this work. But we do know that they have been setting up these so-called Health Work Shops; that they were launched on a nation-wide scale; that they are financed entirely by federal funds diverted from the regular appropriations; and that it was never at any time the intention of Congress or its Appropriations Committeees to authorize the expenditure of public funds for such activities.

To our committee it seemed reasonable to ask why these agencies should be permitted to spend public money to generate an entirely artificial public demand for a system of Socialized Medicine in the United States, when all our experience through public opinion polls, and all our contacts with the medical profession, indicate beyond question that the American people and the American medical profession insist upon maintenance of our traditional system of free medicine, under which we have attained the highest standards of service and scientific skill and proficiency ever recorded in the history of the world.

It seems to our committee to be a proper function of the Congress to determine whether the diversion of public funds from legitimate purposes to purely propaganda purposes for Socialized Medicine, does not, in fact, constitute a criminal violation of the law.

And on this point, I may say that the Federal Bureau of Investigation is giving that question some serious study at the moment. As you know, we advised the Attorney General, Mr. Clark, what we discovered about the Health Work Shops, and we have since been informed that some of the vouchers are in the hands of the FBI for investigation.

World Wide Propaganda

All this federally-financed activity for Socialized Medicine heads up in the Bureau of Research and Statistics in the Social Security Board.

Our committee investigators have found in that bureau a veritable nerve center of socialized-medicine propaganda for the entire world.

Mr. Isadore S. Falk is the Director of Research and Statistics in the Social Security Board. He has been in the government service for some twelve years. He has always been noted for his militant and aggressive advocacy of Socialized Medicine.

Our committee, of course, does not challenge the right of any citizen to hold whatever views he may wish on any subject of political or economic policy.

But we are interested that funds appropriated by Congress for public administration shall not be diverted to a world-wide system of propaganda calculated to advance socialized medicine the world around.

Such operations, until specifically approved by the Congress, are positively illegal. And our committee will not rest until they are uprooted and stamped out of the federal picture.

Illegal Use of Funds

Any group of citizens has a right to agitate for Socialized Medicine, if it puts up its own money and pays its own bills. But I, for one, do not intend to see this gigantic propaganda machine for socialized medicine financed entirely by funds secretly diverted from moneys appropriated by Congress for the legitimate functions of government.

In our hearings to date we have examined officers of the U. S. Public Health Service, the Children's Bureau (which is another section of the Federal Security Administration) the Social Security Board, and the Farmers Home Administration, a section of the Department of Agriculture. As a part of this investigation, we also have called upon the General Accounting Office for certain travel vouchers in connection with the Health Work Shops.

On page 8 of the interim report, which most of you have before you, there appears a tabulation of the various federal officers who have taken part in this propaganda effort. In each case, the agency or governmental unit paying the salary and travel expenses is indicated.

We found that the first meeting on the Health Work Shops was held in Washington on November 2, 1945. It was attended by only twelve persons—ten of whom were full-time employees of the Public Health Service, the Social Security Board and the Department of Agriculture.

Work Shop Born

This is where the Health Work Shops were born. The chairman of that meeting was Dr. George Perrott of the U. S. Public Health Service.

The detailed operations of the Health Work Shops are set forth in House Report No. 786 of the 80th Congress, as published by our subcommittee on July 2, 1947.

Suffice it to say here, that the project was financed almost entirely by federal funds, through the contributions of the participating government agencies—through the assignment of the so-called forum experts from the government bureaus, through the payment of travel expenses, and the providing of literature and mimeographed material for the meetings.

The real purpose of these meetings was to generate pressure upon Congress for passage of the Wagner-Murray-Dingell Bill.

Hilleboe's Statement

At one point in our hearing, our committee counsel, Mr. Frank T. Bow, asked the witness, Dr. Herman Hilleboe, of the Public Health Service, if the literature presented by the government agencies presented all sides of the medical discussion, or merely the side supporting Socialized Medicine, as embodied in the Wagner-Murray-Dingell Bill. To this question, Dr. Hilleboe answered:

"We would naturally give emphasis to that, because that is why we are in government. Otherwise we should get out of government."

Here, indeed, is a strange concept of federal concept of federal service in Public Health—the concept that any physician who is not a vigorous advocate of Socialized Medicine should remove himself from the government service.

And that conception of the public service appears the more distorted when we realize that at no time has Congress approved any declaration of policy favoring the expansion and development of Socialized Medicine at federal expense; nor has Congress authorized the expenditure of public funds for any sort of propaganda work calculated to generate public opinion in behalf of Socialized Medicine as a national policy. Yet here is a responsible official of the Public Health Service testifying before our investigating committee to the effect that the presentation of material supporting Socialized Medicine is a clear and direct moral obligation of the Public Health staff.

Gentlemen, I am here to say that such a distorted conception of the public service in Washington must be uprooted by Congress.

Becker on Stand

On another occasion, we had as a witness before the committee Mr. Harry J. Becker, health

consultant in the Children's Bureau. When asked if his public speeches throughout the country presented both sides of the discussion touching compulsory national health insurance, this witness answered: "I don't know what you mean by both sides."

Those two bits of testimony, in my mind, offer a pretty complete picture of the present set-up in Washington as it relates to government propaganda supporting Socialized Medicine. From the Public Health Service came the suggestion that doctors who do not believe in the Wagner-Murray-Dingell bills simply have no place in government; and from the Children's Bureau came the response that the witness was either unaware of the opposing viewpoint, or had so firmly closed his mind against opposition argument that they could merit no time or attention in his public speeches.

From these incidents it seems reasonable to conclude that some of our bureaus in Washington regard themselves as the protectors and defenders of the whole concept of compulsory national health insurance and Socialized Medicine.

But, again, I want to repeat—that is not what Congress appraprated the money for.

Mission to Tokyo

Ploughing deep into these matters, our investigators soon came upon the much-discussed Health Mission to Tokyo. You have seen reports on this in the newspapers. It, too, is revealing for the light it throws on the operations of the Washington inner-circle which is forever pulling the wires for Socialized Medicine.

In our examination of the Bureau of Research and Statistics in the Social Security Board, we discovered that practically every argument, every pamphlet, every radio broadcast, and every statistical table advocating Socialized Medicine originated primarily in the Social Security Board. Here is the world-wide nerve center of the movement for Socialized Medicine.

Our committee found, and has so reported to Congress, that pamphlets prepared as to basic material in the Social Security Board were distributed to the general public by the CIO, and AFL, the Farmers' Union, the Physicians' Forum and the Committee for the Nation's Health.

All these pamphlets vigorously supported Socialized Medicine as embodied in the Wagner-Murray-Dingell bill.

In several of the pamphlets, no matter by whom distributed, the language and the figures were the same.

"Central Generating Plant"

The Social Security Board is the central generating plant, so to speak. And the material is then distributed for popular consumption by whatever organization will lend its official imprint to arguments and briefs of Messrs. Isadore Falk and Wilbur Cohen.

That's the fundamental set-up discovered by our committee, and that's the beginning of the Health Mission to Tokyo.

Just about a year ago, a federal civilian employee in Washington (one Stanchfield) was detached temporarily from his job to go to Tokyo to make a preliminary survey of social security and health needs. Upon his return to Washington early this year, Mr. Stanchfield proposed a general health mission to Tokyo. His proposal was presented directly to Mr. Arthur J. Altmeyer, Commissioner of Social Security.

Next, on March 5, 1947, Mr. Altmeyer proposed the mission in a formal communication to the War Department. In that letter, Mr. Altmeyer designated the particular individuals who should make up the mission, and then went further to suggest that William H. Wandel, Chief of the Program Division, Bureau of Unemployment security, be appointed chief of the Social Insurance Division of the Public Health and Welfare Section of the Supreme Command for the Allied Powers in Tokyo. It is perfectly apparent from the letters we have taken from the War Department files that the personnel of this mission and the planning of its program originated in and was dictated from the Social Security Board in Washington.

Up to this point there had been no hint that the proposed Health Mission had been requested or urged either by General MacArthur or any responsible Japanese source. The suggestion came first from Mr. Stanchfield, who had been sent to Tokyo from Washington for that particular purpose.

Letter to Isadore Falk

Next, we found a letter, under date of June 14, 1947 from Mr. Wandel in Tokyo reporting directly to Mr. Falk in Washington on the progress of the work in Tokya. In one revealing passage of this letter, Mr. Wandel said:

"We think that our need is for someone who is primarily not so much an economic analyst

as one versed in health insurance. Health insurance is the major field of social security in Japan . . . Permanent revision requires amalgamating National Health Insurance with Health Insurance on a compulsory basis."

When the Tokyo Health Mission finally was named, it comprised two men from the Public Health Service, one from Mr. Falk's bureau, and one from the Federal Housing Authority. This mission departed for Japan on August 28, this year, with the understanding that Mr. Altmeyer and possibly Mr. Falk would follow when the work had been sufficiently organized in Tokyo.

Bureaucratic Intrigue

Because this instance offers a shocking demonstration of bureaucratic intrigue in violation of the purposes and intent of Congress, I have brought the matter to the attention of the House Appropriations Committee, with the suggestion that when the next budget comes up from the Social Security Board and the Public Health Service, all those engaged in spreading Socialized Medicine around the world be stricken from the public payroll—unless, of course, Congress shall determine to support such world propaganda with funds specifically allocated for that purpose.

In my letter to Chairman Taber of the Appropriations Committee, I made eight specific charges against the Tokyo Health Mission. I wish to summarize them here, because they are the nub of our case against the Social Security Board and the U. S. Public Health Service in relation to all this propaganda supporting Socialized Medicine.

Charges Against Tokyo Mission

My charges against the Tokyo Health Mission are as follows:

1 That the health mission to Japan is composed entirely and exclusively of men long identified in the public record as advocates and proponents of Socialized Medicine not only in the United States but throughout the world.

2 That the real purpose of this mission is to lay the groundwork for a system of Socialized Medicine in Japan.

3 That the scheme for such a mission originated in the Division of Research and Statistics in the Social Security Board in Washington, and nowhere else.

4 That the nominal request for the mission was engineered through the General Headquarters of the Supreme Commander in Tokyo by federal employees sent from Washington for that particular purpose.

5 That General Douglas MacArthur does not favor—and does not approve—any plan to establish compulsory Socialized Medicine in Japan.

6 That the dispatch of this mission to Tokyo for the purpose indicated in Mr. Wandel's letter to Mr. Falk under date of June 14, 1947, is a gross misuse of public funds.

7 That the real purpose of the mission is not to assist Japan in working out her basic problems in health and welfare, but to force upon that country a compulsory system of Socialized Medicine.

8 That although the questions here involved are of a health and medical nature, the Surgeon General of the United S ates Army was not consulted in reference to the problems involved.

TAXPAYER FOOTS THE BILL

I deem it inappropriate for federal employees, at the expense of the American taxpayer, to travel throughout the world preparing or assisting in the preparation of legislation to be adopted by foreign countries when similar legislation, long pending, has not been approved by the Congress of the United States.

It is hardly necessary for me to tell you that we shall watch developments in this case with lively interest. General MacArthur certainly does not intend to lend himself to any such intrigue by our Washington health bureaucracy.

And I am equally certain that my distinguished colleague and good friend John Taber, Chairman of the House Appropriations Committee, does not intend to see federal funds misapplied in this fashion. We shall hear more of this Mission to Tokyo as our investigation goes forward.

INTERNATIONAL COMMUNISM

One other point about these operations in the Social Security Board merits brief attention at this juncture, although our inquiry in this direction has not been concluded. The fact is that this entire movement for world-wide Socialized Medicine is tinged and infiltrated with international Communism.

World Communism has adopted compulsory

health insurance as one of its major tenets; and our committee investigators have found the agitation for Socialized Medicine in the United States closely linked with Communist and Fellow-Traveler publications and meetings.

JACOB FISHER'S RECORD

Under date of May 14, 1947, Mr. Isadore Falk, Director of the Bureau of Research and Statistics, sent a memorandum to the Acting Commissioner for Social Security, urging that one Jacob Fisher, a member of Mr. Falk's staff, be sent to New Zealand at Government expense, to study compulsory health-insurance programs and activities in that nation.

We find that this same Jacob Fisher has been documented by the House Committee on Un-American Activities for almost uninterrupted association since 1939, with various Communist-front and fellow-traveler organizations in the United States. At various times, according to his record, Jacob Fisher has been identified with seven different groups or organizations avowedly sponsoring the Moscow party line in the United States. He has published at least one report on health insurance in New Zealand, in the Social Security Bulletin—a report which has been criticized by some reputable medical authorities as extremely biased.

In a later interim report on propaganda activities within the Social Security Board, we shall present to the Congress the detailed record of Jacob Fisher's activities, as certified to us by the Committee on Un-American Activities, together with additional material bearing upon organized Communist agitation for Socialized Medicine, through such agencies as the Southern Conference for Human Welfare.

THE MOSCOW PARTY LINE

Suffice it at this time to report our firm conclusion, on the basis of the evidence at hand, that American Communism holds this program as a cardinal point in its objectives; and that, in some instances, known Communists and fellow-travelers within the Federal agencies are at work diligently with Federal funds in furtherance of the Moscow party line in this regard.

I must emphasize that I have not given you a complete and comprehensive report on our Committee's work. But within the limits of the time allotted, I have summarized the main points of our inquiry as it touches this vital problem of government propaganda in support of compulsory health insurance.

From the letters which have come to us in Washington, I know that the medical profession is well aware of what's going on in the Public Health Service and the Social Security Board. And the medical profession welcomes and supports our investigation.

ILLEGAL ACTIVITIES

We know, too, that much of the activity we have cited is positively illegal under Section 201, Title 18 of the U. S. Code.

That section offers a blanket prohibition against the use of any part of any federal appropriation for the purpose of influencing legislation before Congress. That's the legal point which is now under vigorous investigation by the FBI.

But the issue is even broader than the question of Socialized Medicine. It is also challenging in that it reveals for public examination the manner in which all government lobbyists operate on the government payroll, how they are always at work to expand their fields of interest, to perpetuate themselves in office, and to impose their ideas and systems upon the American people by organized propaganda paid for entirely by the diversion of public funds from their true purposes to the shielded purposes of the top bureaucrats and planners.

THE BASIC ISSUE

This is the fundamental issue from the legislative standpoint—the question whether the Congress of the United States has lost its power to establish and maintain the sort of government the people want; or whether the bureaucrats are supreme and can give the sort of government they want, regardless of Congress, regardless of elections, regardless of public opinion.

That's a question that goes to the very roots of popular government. If the bureaucrats are above Congress, and may defy Congress in the way they spend their appropriations, then representative government has become a fiction.

PLANNERS DEFIANT

I am certain that the United States has not yet reached the point where it must be submissive to the dictates of a rampant bureaucracy in Washington.

But my work with the propaganda sub-committee during the last six months has convinced

me that there are danger signals in the air.

The spirit of defiance encountered by our committee investigators within the Social Security Board and the Public Health Service is a most unwholesome sign.

The circular letter sent out by the Surgeon General, Dr. Parran, in 1945, wherein he directed that all public statements should be in line with the President's National Health message, regardless of the individual views of the officer himself—that is a very dangerous sign in a nation devoted to representative government.

We must not fall into the attitude that all our opinions are made in Washington and handed down to us full-fashioned. That is the way of dictatorship.

HERITAGE OF FREEDOM

Public Opinion must be maintained in its free and virile state—in full harmony with the great American tradition of liberty.

If we do that by stamping out government propaganda at its roots, then we shall have rendered a great service, not only to medicine, but to the whole cause of liberty and freedom the world around.

We all know that freedom is not free.

We all know that bureaucratic power feeds upon itself—and upon the rights and privileges and liberties of the people.

If we are to support and defend liberty and constitutional government in America, we must begin by keeping clean and undefiled the wellsprings of public information from Washington.

Government propaganda poisons the wells of public information.

Government propaganda is illegal.

Government propaganda is a method of dictators.

OUR PURPOSE WILL BE TO UPROOT AND DESTROY GOVERNMENT PROPAGANDA WHEREVER WE MAY FIND IT.

Changing Trends in Medical Research and Practice

DR. E. FORREST BOYD,
Los Angeles, California

A change in trends most often is the result of an individual's new concept or approach to an old problem, or an approach to a totally new problem, by either an old or new method. This new idea, in order to become effective, or popular, must have the backing of an influential minority, with its pressure upon the masses, or the ability of the minority to so influence the masses that a new idea or method readily becomes a mass movement, for good or for bad. Hence the value of a catchy slogan or aim for any new movement.

The medical profession is certainly at the "cross roads" at the present time and the chief factors involved are:

First: A radical break from tradition and all that that means.

Second: The impact of mass public opinion which is being molded by a minority with a lust for power, who are using as tools in this struggle certain fallacious economic arguments. They, in their zeal for power, have not told the people of this country that in England and Germany where State medicine has been put into effect, the sick rate has increased almost three times as much as the previous sick or morbidity rate. Nothing has been said about the increase from the standpoint of financial cost.

The public has been educated along the lines of mass production of the assembly line type and has been made to feel that the same arguments would apply to medicine. On the other hand, when they do get into a really streamlined effective clinic they somewhat resent the fact, that by the very nature of the situation, they become practically as individualistic as a left front head light or a rear bumper on a car on the assembly line. The public does not realize that the modern doctor has at his elbow the means of acquiring information of all sorts from technicians of many types with their laboratory tests and reports; which means that much valuable technical information is accurately and quickly supplied, which formerly took the family doctor much longer to obtain by more devious and less accurate methods. This means, however, that the modern doctor spends much less time per patient; yet is able to do much more

Read at the Harlow Brooks Memorial Navajo Annual Clinical Conference, Sage Memorial Hospital, Ganada, Arizona, Aug. 1947.

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for the patient in the reduced time interval. This has its good and bad aspects; good from the standpoint of the accurate and better medical or surgical advice but bad from the standpoint of the Doctor-Patient relationship which all through the ages has been so valuable and comforting to the patient, nevertheless, time consuming for the doctor. However, there are other branches of medicine that today are replacing the informal and important conferences between patient and doctor. I refer to the rapidly developing field of psychosomatic medicine and the increasingly more elaborate field of psychiatry and psychology, plus a new but rapidly developing partner in arms—in the field of pastoral counselling along psychological lines by the clergy.

From all sides we are witnessing great innovations in all phases of existence. We are adapting ourselves accordingly to changes without much fuss or ado. Architecture of buildings, homes, bridges and autos has made radical, and at times hideous changes from what we were used to—but we seem to get along. Highways are being radically changed and in some instances blocks or really miles of buildings, including homes and office buildings are being demolished to make way for the new plan and scheme in transportation and now we are toying with the real prospect of supersonic speed and all that that implies.

The medical profession must be alert to these radical changes in other spheres and be prepared to lead the public into the newer fields of medicine and related subjects.

Perhaps the logical place to start is in the changing educational requirements and the effect that these will have on the students contemplating the study of medicine. The factor of the better educated and more alert laity demanding more and better doctors with cheaper medical and hospital rates is for the medical profession a serious and thought provoking dilemma. This demand is made in spite of the fact that the U.S. of America has more and better trained doctors at the present time than any other nation on earth, and also in spite of the fact that the U. S. of America is graduating about 2000 more doctors per year than are dropping out of the professional ranks as a result of disease or death. Medical education has been streamlined to a great extent but even now, if a man trains for a specialty before going into private practice, he is well into his thirties, to say nothing of the financial outlay before he is on his own, so to speak. The more research unearths, the more the average doctor will have to learn and hence, the longer his student days unless a revamping of the curriculum is done very shortly.

It seems that the kaleidoscopic change of events will be felt more and more in the high school level as manifested by changes in educational practices. The advent of atomic energy with its countless possibilities in so many different realms has of necessity changed over night the entire field of physics, chemistry and related fields.

A few of the revolutionary changes bound to involve medical education as a result of the application of recent advances in atomic energy are as follows: As every one realizes atomic energy in its application is fraught with the dangerous effects of radiation in the formation of new toxic materials with which research scientists have had no previous experience. Therefore, an entirely new field of medical safety engineering concerning atomic energy must be evolved which will require an entirely new type of safety engineer in the medical field. Then again the problem of education along precautionary lines must be set up to inform not only the medical profession but the entire civilian population as well for peace and war.

Probably the greatest change that will effect medical education and research is in the field of the isotope technique in research. The Isotope technique involves the use, both in research and medical treatment of the stable and radio-active isotopes of the elements essential to the body's nutrition; namely, carbon, phosphorus, iodine, ion, calcium, etc. From this comes the use of of life processes in animal and plant life. In radio-active isotopes as "tracers" for the study life processes in2 animal and plant life. In reality the value of the radio-active isotope is only limited by the investigator's imagination. It really amounts to an atomic attack on disease and the peace time accomplishments of atomic energy in the medical field alone in the past year is almost fantastic.

These developments will profoundly influence medical science, practice and research and will develop the need for a specially trained engineer in nuclear physics to plan safety techniques for this research.

Medical training for the atomic age must be-

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gin in early college and ahead of the regular medical school curriculum proper. In medical schools there is gradually and rapidly developing a new branch of biophysics which to a great extent depends on the development of instruments such as x-ray spectographs, electron-microscopes, cyclotrons and other instruments in the process of development at the present time.

There will naturally be a close relationship between the developments in bio-physics and those in atomic energy, in which field, the common place gadgets in use by the atomic physicists are the Geiger counter, the ionization chamber, the electroscope and the development of other instruments from these. Then it is easy to see that the necessary "scientific trio" will be the synthetic chemist, the medical bio-chemist and the physical chemist, all working together in an interlocking research pattern. They, on the other hand, will be scientifically obligated to work hand in hand with the organic chemist, biologist, medical researchers and all other biological investigators, for the day of the independent research worker is practically a thing of the past. Soon, the finding of this large group of investigators as manifested by the technique of counting "tracers," determining blood balance in radio-active substances and other techniques will become routine hospital measures carried on by specialized workers.

Stop for a moment to contemplate what this technique will mean. The tracer isotopes will visualize the pathway of a molecule through the body, no matter how devious its course. The active and at present secret ways of enzymes, vitamins, hormones and even insulin may be discovered. It will probably be possible to study the function of individual cells and thus a path to the action of the cancer cells may be laid bare to the eyes of the investigators. It may soon be known why the cancer cells become different from their normal parent cells, why the cancer cells poison normal cells and how they are able to spread to other parts of the body and grow among other normal cells. It may be possible that the cancer cells use some substance peculiar to them alone and if this isolated, then some radio-active isotope with a special affinity for cancer cells may be developed, which by its radiation would destroy the cancer cells.

The future of the research worker in the field of radio-active isotopes is filled with a tremendous volume of work for a small army of highly trained biological and medical investigators for several years to come, all of which will mean more comfort and longer life to the genus homo sapiens, especially and also his animal associates.

Just as the giant 200-inch telescope at Mt. Palomar with its power equal to one million human eyes will push back the veil that shrouds some of the fina. mysteries, so has the work in atomic energy opened a path to countless new avenue of research. Just so another source of research has been opened to the investigators by means of the electron-microscope with its fantastic possibilities in the realm of the viruses. Polio may be on the run at the present time. This instrument will aid the study of proteins, globulins, albumen and the body components, of blood, lymph, muscle, nerve and body excretions and secretions and will present new problems but will also present new answers and tools, with which to conduct the work of the future as weapons of defense against the degenerative processes. Medical research of the past has been largely isolated and at times quite effectively insulated and many times done with far too little financial aid and help. As a result, it has been done in a disconnected and disjointed fashion, by various groups of scientists or doctors in different parts of the world. As a rule they have worked in secret; their experiments unknown to one another and frequently running along parallel lines. Of necessity, in this era, research has been on a small and restricted scale for many reasons, the chief being, financial. The research of the future, however, will assume of necessity entirely different aspects and approaches to the problems.

The chemist will need the help of the physicist; the biochemist will need the help of the nuclear physicists and all of these different people will need the help of the bacteriologist and the physiologist. Consequently research will have to be carried on if it is to be effective in most instances in large, well endowed institutions, where there is a new relation and integration and interlocking of all the different branches of the kindred sciences with their related problems. Obviously, procedure along such necessary lines will dwarf the 27 million dollars now annually allocated by the medical schools for the total medical school budgets. Of this, only a small fraction is used for research. The problem looms large when one stops to consider that over one

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thousand different products in the urine alone have been discovered, and that in the field of the study of proteins, the problems are so vast that a large amount of money and a great number of research workers will be kept very busy to determine the structure of proteins in terms of the amino acid residues representing more than twenty different amino acids. Obviously a different source of money apparently will have to be produced in the future, for research purposes. This money, regardless of how it is raised, should be at the disposal of the research centers and in no way regulated by political, or other means. Despite the handicaps in the light of research in the past, many remarkable discoveries have been made, in many lines, including vaccination and immunology, thereby throwing a great barrier of protection around the children of the civilized world. The result is that we have better children, more healthy children and children better developed physically and mentally. Many of the scourges of childhood have been completely, if not almost banished, such as diphtheria, whooping cough, small-pox, typhoid fever, and other diseases highly contagiolus or infectious, have been greatly restricted. In the field of pediatrics much has been accomplished by research. The surface has only been scratched so far. True, there is less morbidity and fatality, but the problems are becoming more and more complex and thus require a deeper and more coordinated study by all scientists including physicians, physicists and chemists. The great frontiers of rheumatic fever, virus infections, the allergies—including hay fever and asthma—must still be explored and conquered. This will require research teams along different lines than of those of the past, for the coordination and dissemination of ideas, and the solution of these problems. Not only are the problems becoming more and more difficult, as the more obvious causes have been discovered, but the problems requiring the services of many different branches of scientists for their solution are becoming more extensive. Another field that is open to the medical profession and studded with difficulties and problems is geriatrics. Adult life has been lengthened in this country until there are now about eleven million people over sixty-five years of age. This has a bearing on cancer which will be spoken of later. Many things have been learned in the research problems for a long life and to make lives more comfortable, notwithstanding the process of degeneration. However, many things remain to be discovered. The degenerative diseases must be more thoroughly understood from the standpoint of etiology and genetics. There is a woeful lack of knowledge of the changes that accompany old age and also a great lack of understanding of the human body in its normal and pathological stages. This leads us to the fight against cancer. Recently, a few most important leads as to the presence and progress of cancer have been discovered in the urinary secretions of both normal and abnormal individuals. A more intense study of sickle cell anemia and the condition of hemoglobin in the blood stream has thrown more light on this still most formidable disease. The public must become cognizant of the fact that cancer may occur at any age—not just after forty years of age. The medical profession must ever be on the alert for the early signs in the earliest stages of the hydra-headed monster "cancer" with its ever changing insidious guerilla warfare mode of attack. In spite of the fact that the cancer death in the U. S. will die of cancer if no new discov- cancer is not increasing. Approximately 70% of the increase in the published death rate for cancer since 1900 is explained by the aging of the population. The ratio of the cancer population in the U. S. has gradually changed from the earlier status where there were two young adults in the so-called non-cancerous age to the ratio of one in the cancer bearing age until at present there are almost three times as many people in the cancer bearing age as in the non-cancer bearing age. As it stands at the present time, 25% who die could have been saved through early diagnosis and proper treatment. About 50% are dependent upon discoveries yet to be made from research. Seventeen million people now living in the U. S. will die of cancer if no new discoveries are made. Therefore, the urgency of cancer research in all lines looms large and imperative.

The United States of America had the specialized scientific brain power to solve the atom bomb problem in 4½ years with an expenditure of two billion dollars. I feel certain that we as a nation have the specialized scientific brain power if given the proper and adequate financial backing by our government, to solve the problems of cancer in all of its forms, also solve many if not all of the virus diseases, solve the riddle of the allergies, lick the problem of tu-

berculosis, find the solution of the arthridities and batter down the barriers that lead to the premature development of the degenerative processes. What if it did cost two billion dollars and took more than four years time? Is not the study of the preservation of a comfortable and productive populace more important than the development of lethal weapons for the total or subtotal destruction of mankind? We have developed a superb method for global suicide, let's develope methods for the physical betterment of humanity of a global scope.

Time does not permit one to go into discussion of the ever expanding field of hormones and vitamins. Likewise, the impact of radar in the practice of medicine, especially now in some fields where it is being thought advisable to replace all short wave diathermy with radar.

Since by means of modern transportation and communication, the entire globe has been reduced to approximately the size of the original thirteen colonies, we are confronted with many social, economic and hygienic problems that never before faced the medical profession. It is but a few hours from a plague infested, malaria infested or yellow fever infested area to the very heart of the U. S. Are we going to successfully cope with these problems by training enough men in the proper lines to combat this problem?

The medical profession and our scientists in general are alert to the changes that will be made and the results these changes will have upon the human being. Supersonic speed has been alluded to once before. We still have not conquered all the problems of subsonic speed. In another field, what effect will the changing type of advertising, especially from the standpoint of lights and high frequency currents have, if any, upon the nervous system and the visual acuity of generations to come? Also, what of the effects of our changing types of foods—in the offing we have synthetic foods of all types appearing ,including juicy beefsteaks made from rayon—with a few changes, a worthy end for worn out dainties.

Other factors to be mentioned are as follows:

First, the realm of new drugs and therapeutic agents. The entire concept of therapy in practically every field of medicine has been altered or in some places completely changed, due to the advent of new and very effective drugs, in most cases against hitherto highly resistant, if not incurable diseases. The modern doctor has to be very plastic from the intellectual standpoint in order to keep abreast of the times, from the therapeutic standpoint. We are now on the fringe of radio active isotopes and radio-active elements such as sodium, iodine, boron, phosphorus, calcium, carbon, nitrogen and many other elements which are going to literally visualize normal and pathological processes before our eyes.

A great deal has been talked about general practitioner and rural medicine and its phoblems. We of the present generation must seriously consider these two factors. The role of the general practitioner, however, is well on the way to what appears to be a satisfactory solution from many standpoints and that role in a very short time is going to be more emphasized, more dignified, and more circumscribed, and I hasten to explain the latter statement as follows:

Rural communities in the strict sense of the word, in America, are rapidly diminishing; not that the communities are being put out of existence, but with the advent of more and more good roads, which are penetrating deeper and deeper into the so-called rural communities and with improved means of transportation, including aeroplanes and helicopters, people in the most remote sections are going to be, in a short time, within a matter of minutes close to the best urban medical and surgical centers available. There seems to be a trend also on the part of many splendid physicians in all branches of medicine to become suburbanites. This is as it should be and with the advent of more generalized, modern conveniences, such as electric light, power, and air conditioning; and here it may be that within a few years time, "tame" atomic energy will probably be available for every hamlet and hovel in the world. Such being the case, it is easy to visualize many doctors who would prefer that kind of a life to the "pell-mell" rush of a great city, and it is entirely possible that within the next few years, with air conditioning, television, radio, wireless telephones, and other conveniences, that groups of doctors will deliberately go out to these so-called out-of-the-way places and establish clinics—second to none. In these areas it will be easy to have a small club house, a small golf course, swimming pool, airports, and all the other conveniences minus the drawbacks of city life. Also, it is easy to visualize the fact that specialists, "circuit riders" from the great medical centers, would be happy to

spend a few days or a week or so in these remote medical centers holding a sort of refresher course, at the same time enjoying golf, horseback riding, swimming and other outdoor activities. It is no great stretch of the imagination to visualize a surgeon in any specialty, an internist, a psychiatrist, or any other type of medical specialist availing himself of the opportunity to spend a few days in some remote center accomplishing as mentioned above, two different ends. If organized medicine makes some such gesture as that plus other economic schemes for the help of the poorer people, the spectre of socialized medicine can be pushed out of the window once and for all and the doctors will live longer—they will be of more use to society, and they will be happier. Children could even commute to college or high school hundreds of miles away by means of airplanes, helicopters, or jet propelled modes of conveyance.

We of the so-called civilized nations of the world are doing everything we can to save time; utilizing all sorts of short cuts and doing everything in our power to annihilate time and distance. Is the gap between the so-called civilized peoples of the world and the more backward races, such as those of the central part of China, Russia, India, Africa, Korea, Tibet, and other places becoming wider and wider? In the centuries to come, will they be the survivors going along at their tempo of life, slightly increased over that of the present, and will we be extinct? These are interesting questions and are we projecting ourselves in any way into the future or having a study made of the possibilities of the limitations of the human mechanism. What will happen when we have reached the saturation point of speed, of color tolerance, of vitamins and concentrated food tolerance, and have available the many synthetic products that are just in the offing.

The progress of medicine down the ages has been as thrilling as a detective story; as romantic as romance itself and filled with as much adventure as a pirate's life. Its roster has been studded with many great names that will last as long as time. Its members have been challenged by the medical needs of the public and their unselfishness has known no geographical boundaries or racial barriers. Medicine, in its advance has met successfully most all of the problems of the ages, those of the numerous scourges that have been met by vaccination, immunization and hygiene. Medical science has gradually pushed its way into the darkest spots of the universe. It has met the challenge of the hovels and the palaces with equal success. It has faced squarely the fact of failures and the call of adversity, and the duties of warfare at all times. It has met the challenge of public opinion often misled and it has met the challenges of that slimy, slinky monster—humanity's greatest enemy—The Greed for Power and Totalitarian Leadership. Medicine has never sidestepped poisoned darts aimed below the belt; and often has returned shafts of medical hygienic help in exchange for those poisoned shafts. In spite of the many glaring faults and the human frailties of the medical profession, humanity may some day realize that the medical profession has been, and will continue to be, humanity's greatest friend and benefactor. The public will never know of the loss of many valiant and brainy research workers among the profession, who have given their all that others may live longer, happier and healthier lives. The public is all too quick to criticize, or all too slow to show gratitude to and for those silent, ever vigilant guardians of health, who all too often prematurely acquire the ashen gray faces so common to the conscientious and overworked, seldom well paid, but often censured medical practitioners. The pages of history bare mute testimony to the fact that the medical profession has, at all times, been a friend to humanity and has suffered much from humanity.

At present there is the specter of World War Three which looms bright on the horizon. The medical profession must use every influence possible to prevent such a cataclysmic event, but on the other hand, they should use all their influence to the end that the medical services of our forces should be efficiently organized and adequately equipped to meet such a catastrophe. Should World War number Three occur, at least twenty-five to fifty million people of our country will be wiped out of existence, or rendered helpless in the matter of a few hours and before the nation knows that we are at war. We will be contending, within such an event, not only the deadly gamma rays of atomic fission, but undoubtedly we will be confronted with mass pollution by poison, toxins or organisms involving literally thousands of square miles of our territory. It is in the realm of the medical profession to preach the tenets of peace and good

will among men. We should be ever alert to spread the propaganda of peace, not a spineless sort of peace, but a virile peace that will benefit all humanity.

Finally, the responsibility of the medical profession to perpetuate the "American Way" is very real. If we believe that as individuals we are endowed with certain divinely given inalienable spiritual rights, then our system of government, our free economy and liberties have a firm foundation on which to rest. Those thoughts are the basis of free and progressive medical science. Freedom of all just types must be won and re-won by every generation for itself and we must never lose sight of the value of liberty and the concept of the sacredness of the individual in the eyes of a Sovereign God. The outstanding eras of history have had their slogans. That of the Greeks was "Know Yourself;" the Romans, "Be Yourself;" the Christians, "Give Yourself." Which last quote is the epitome of the life of a true doctor.

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Poliomyelitis Current Literature

229. Baker, Milton E., and Baker, Ilene Godfrey (Minneapolis General Hospital).

ACUTE POLIOMYELITIS IN PREGNANCY; REPORT OF 30 CASES. Minnesota Med. 30:729-734 (July, 1947).

"During the period of July 29 to September 21, 1946, 695 cases of acute anterior poliomyelitis were admitted to the Minneapolis General Hospital. Of this number, 115 were females in the child-bearing age of fifteen to forty-five years, and of these, thirty were pregnant There were seven in the first trimester of pregnancy, seventeen in the second, and seven in the third. Fifteen live babies had been delivered by March 15, 1947. Eight of these deliveries were spontaneous, and the infants were full-term. One was a cesarean section; two were simple low forceps extractions; one was carried out by conversion of a brow to an occiput posterior position and a low forceps extraction; one was a breech extraction of a premature infant with osteogenesis imperfecta; one was a normal spontaneous delivery of a premature infant; and one was a post-mortem hysterotomy which produced an infant of seven lunar months' gestation which lived only five minutes. Seven spontaneous abortions and six deaths occurred among the thirty pregnant patients.

"Acute anterior poliomyelitis occurs in all three trimesters of pregnancy. It occurs in the pregnant woman more frequently than can be attributed to mere chance. In general, pregnancy has little influence on the course of poliomyelitis or the extent of paralysis. There is a relatively high percentage of abortion (30.4 per cent) among pregnant patients with poliomyelitis. This study produced no evidence to show that the fetus can or cannot contract poliomyelitis in utero."

Authors' summary and conclusions.)

17 references.

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236. Hortsmann, Dorothy M. and Paul, John R.—(Yale U. Sch. Med.)

THE INCUBATION PERIOD IN HUMAN POLIOMYELITIS AND ITS IMPLICATIONS. J.A.M.A. 135:11-14 (Sept. 6, 1947).

"While analogies may be drawn between the observed incubation period in experimental poliomyelitis and that estimated for the human disease, exact information concerning the latter cannot be obtained in this fashion. It should be emphasized, however, that poliomyelitis virus is capable of great variability in behavior in various hosts under different conditions; in the human disease the interval between apparent exposure and the onset of clinical symptoms and signs has been observed to be as short as three and as long as thirty-five days, with many cases developing after a four to ten day period. But unsolved problems as to what constitutes exposure, what role latency may play and what the pattern of pathogenesis is, represent some of the factors to be elucidated before exact knowledge of the incubation period in human poliomyelitis can emerge."

(Authors' comment and summary.)

19 references.

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248. Pedersen, Paul M.—(U. California Med. Sch.)

A STATISTICAL STUDY OF POLIOMYELITIS IN RELATIONSHIP TO TONSILLECTOMY. Ann. Otol. Rhin. & Laryng. 56:281-293 (June, 1947).

"A review of 492 cases of poliomyelitis hospitalized in San Francisco during 1941 to 1945 is presented. The cases reviewed were found to have originated from 34 counties in the State of California, which reported 2,057 cases of poliomyelitis during the five-year period for the same counties. A survey of hospitals in the 34 counties concerned reveals a total of 57,796 known tonsillectomies performed during the five-year period. In one group of patients with tonsils present, there were 6 deaths, while in another group with tonsils removed there were 11 deaths. In the group with tonsils present there were 11 cases of bulbar and bulbo-spinal type poliomyelitis, while in the group with tonsils removed there were 24 cases of bulbar and bulbo-spinal poliomyelitis. Of 492 cases of poliomyelitis surveyed, there were 11 cases of poliomyelitis following recent tonsillectomy. There were 314 cases of poliomyelitis following tonsillectomy reported in literature heretofore. Of 11 cases of poliomyelitis following tonsillectomy, 7 cases occurred within the probable period of incubation. Neuropathological studies at autopsy in 8 cases strongly suggest a pharyngeal portal of entry.

"From our study of these cases we find: That

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the incidence of poliomyelitis to general population in an epidemic year (1943) was (ratio) 1 to 1,960, while the incidence of poliomyelitis following tonsillectomy for the same period was (ratio) 1 to 1,782 (5 cases in 8,910 known tonsillectomies). That the incidence of poliomyelitis following recent tonsillectomy is not greatly out of proportion to the ratio of disease to the general population during an epidemic year. That when poliomyelitis occurs following tonsillectomy it is more apt to be bulbar in type. That there is a higher incidence of bulbar and bulbo-spinal type of poliomyelitis in tonsillectomized patients than in non-tonsillectomized patients, the ratio being two to one."

(Author's summary and conclusions.)

44 references.

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249. Priest, Robert E.; Boies, Laurence R., and Goltz, Neill F.—(U. Minneso.a Med. Sch.)

TRACHEOTOMY IN BULBAR POLIOMYELITIS. Ann. Otol., Rhin. & Laryn. 56:250-263 (June, 1947).

"Experiences with tracheotomy during the Minneapolis poliomyelitis epidemic of 1946 are analyzed. 1830 cases of poliomyelitis were treated in Minneapolis during 1946. Approximately 400 'bulbar' cases were reported. Seventy-five tracheotomies were done. Twenty-nine of these patients survived.

"The tracheotomies were done at the Minneapolis General Hospital and the University of Minnesota Hospitals. On the University Hospitals' pediatric service and at the Minneapolis General Hospital, tracheotomy was performed when the following indications existed: respiratory distress as evidenced by recurrent cyanosis, coarse rales in the chest and laryngeal stridor; excitement and unmanageability causing the patient to resist pharyngeal aspiration; stupor of a degree sufficient to make the patient oblivious of accumulation of secretion in his airway; inablity to cough effectively; pharyngeal pooling of mucus, vocal cord paralysis, or intralaryngeal hypesthesia demonstrable by laryngoscopy.

"On the adult neurology service at the University Hospitals the criteria listed above were considered to be indications for tracheotomy. The physicians in charge of the University adult neurology service came to believe that tracheotomy gave the patient his best chance if done before cyanose occurred, because cyanosis can only be diagnosed clinically when it is rather far advanced and when anoxia has done irreversible damage to a central nervous system already markedly damaged by the virus.

"The detrimental effect of anoxia on the central nervous system is emphasized. We believe that this has been stressed sufficiently by only a few authors writing about bulbar poliomyelitis.

"As a result of our experience in this epidemic we believe: (1) that tracheotomy improved the chance for survival of properly selected bulbar poliomyelitis patients, if done before anoxia has produced significant central nervous system damage; (2) that tracheotomy used in conjunction with various means for producing artificial respiration will enable some critically ill poliomyelitis patients to survive until natural recovery of damaged neural tissue can occur.

(Authors' summary and conclusions.)

13 references.

THE TREATMENT OF ACUTE POLIOMYELITIS TOGETHER WITH SOME SUGGESTIONS ON DIAGNOSIS

Philip M. Stimson, M. D.
New York, N. Y.

The Journal of Pediatries, Vol. 31, No. 1, July, 1947.

This article is written to clarify and enumerate the specific measures to be taken by a physician when confronted with acute poliomyelitis.

The reassurance of the patient and his family and seeking to obtain their cooperation and confidence is of primary importance.

Next, the determination of need of immediate treatment and the determination of evidence that the patient's life may be at stake is in order. If there is involvement of the 9th, 10th, 11th, or 12th cranial nerves, one must be prepared for weakness or even failure of one or both of the two vital centers.

Failing cardiac center is shown by a rapid, thready irregular pulse and a falling blood pressure. When the respiratory center is failing, the patient's breathing is apt to be irregular and shallow, but usually he can, on demand, take a deep breath.

It is usually well to determine not which nerve is involved, but which bulbar manifestations are present. These include regurgitation of fluids through nose, loss of gag reflex, blurring of speech, tongue deviation, and difficulty or inability to swallow and cough.

These signs enable one to recognize the bulbar case. The pulse and blood pressure are watched closely. The pharynx is kept clear of accumulations of mucus. Repeated suction may accomplish this. It may necessitate the use of a bronchoscope or laryngoscope or a tracheotomy if severe or if atelectasis should occur.

Early use of oxygen is beneficial. It is best given by nasal catheter, but should pass through a water trap. The soft rubber catheter is inserted a distance one and one-half inches less than the distance from the nostril to the external auditory meatus in adults. In children it is one-half inch shorter. Oxygen flow is maintained 4 to 6 L. per minute.

Drugs for bulbar stimulation are caffeine sodium citrate, 10 mg. per kilogram of body weight, repeated every one-half hour if needed. For falling blood pressure, neosynephrine by hypodermic, 1/10 mg. per kilogram is used.

If difficulty in swallowing is present, nothing is given by mouth. Intravenous fluids are given, 2 L. a day. If this persists, a Levine tube should be passed if possible. The patient is then fed such preparations as egg milk shakes fortified with vitamins and amino acids. After the patient can swallow, fluids in sips are given. This is slowly increased. Milk is given only sparingly.

If both deltoids are paralyzed, there is always marked weakness of the diaphragm. It must be watched. Fluoroscopic observation may be necessary to show the reversed motion. Bulbar patients almost always do badly in repsirators. The oxygen must have a clear passage to the lungs. The tight muscles can be relaxed appreciably and often rapidly by hot moist heat. Finally, if the patient hasn't enough muscle power he must have artificial respiration.

There are three indications for use of artificial respiration. First, is to relieve the patient on the verge of coma due to anoxia, who, despite nasal oxygen, is developing twitching around the corners of his mouth. The second, is to benefit the acutely ill patient who has been without sleep for several nights and is becoming tired. The third, is to help the patient who has been in a respirator and is out by day but cannot sleep at night due to the continual muscular effort required for breathing. Sedation of any sort is contraindicated.

Only trained personnel should use the respirator. The patient should be made comfortable in this. Negative pressure should be used, and the amount of pressure and rate should be adjusted to the patient's comfort. Rate of 14 to 16 per minute and a negative pressure of 12 to 14 cm. of water is usually the best.

If there is no immediate danger to life, i.e. the patient has neither bulbar nor respiratory difficulties, the details of treatment are as follows:

The patient is put to bed on a firm mattress with a bed board. A minimum of clothing and a vertical foot board with a slight blanket roll beneath the knees is used. No pillow is used. The patient is made comfortable.

Proper isolation measures are instituted according to local health regulations.

The patient is disturbed as little as possible. Sedation is not used. Hot packs are used three or four times a day to combat the pain and increased muscle tensions. This may be accomplished in hot baths or in wet sheet and blanket packs.

Bowel and bladder function is watched. Catheterization and enema may be indicated. Laxatives are not used until the subacute or chronic stage. Milk of Magnesia is the one of choice.

Drugs recommended, as indicated, are aspirin, Caffeine, and neosynephrine. Curare and Neostigmine are not advocated for general use.

In the subacute and chronic stage, other specialists should play a part. The pediatrician should have the physiotherapist contact the patient early. As the patient is rehabilitated the orthopedic surgeon should be contacted to help prevent deformities, provide mechanical support for early activity, and for needed reconstruction surgery.

The physician's responsibility does not end with the patient. He must inform the family and others of the means to be taken to prevent the extension of the ravages of the disease. The rest of the family and contacts must be watched for possible minimal infections and treated by bed rest. The physician must be able to give helpful suggestions for prophylactic measures to be observed in an epidemic.

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NEUROPATHOLOGIC OBSERVATIONS IN RELATION TO MOTOR SYMPTOMS

David Bodian, M. D.

The Journal of the American Medical Association, Vol. 134, No. 14, August 21, 1947.

An extensive histopathologic survey of 24 fatal human cases of poliomyelitis is reported. These features of the pathological picture of poliomyelitis are stressed.

All evidence available shows conclusively that every case of poliomyelitis, human or experimental, exhibits lesions of the brain. As far as pathology is concerned, all cases of poliomyelitis are encephalitic.

Some parts of the brain seldom, if ever, are affected. These include primarily the entire cerebral cortex, except for the motor area, the corpus striatum, except for the globus pallidus, and the cerebellar cortex except for the vermis. The brain stem, as far forward as the hypothalamus and thalamus, bears the brunt of the cerebral pathologic changes in poliomyelitis.

Great variation occurs in involvement of most

centers of the central nervous system, but the same centers are generally involved to a greater or lesser degree in almost all cases.

Some animals with non-paralytic poliomyelitis do not have any lesions in the spinal cord but have a characteristic distribution of lesions in the brain.

Only a few centers are severely involved often enough to suggest that they regularly play an important role in the motor symptoms of poliomyelitis. The centers most frequently damaged are the vestibular nuclei, roof nuclei of the cerebellum, and the reticular formation. Spasticity, tremor, and hyper-reflexia of leg muscles probably are due to involvement of these centers.

These have been demonstrated in the pre-paralytic stage of experimental poliomyelitis before virus or lesions could be demonstrated in the region of the spinal cord which corresponded to the affected muscles. Severe lesions, however, were always present at this time in centers of the brain stem. Some animals with non-paralytic poliomyelitis do not have any lesions in the spinal cord but have a characteristic distribution of lesions in the brain.

The severest damage, as a rule, occurs in the vestibular nuclei and in the reticular formation.

Atrophy in xperimental animals is proportional to the number of motoneurons destroyed. Atrophy of disuse in humans may be superimposed on denervation atrophy to a greater extent than in the always active monkeys.

The histopathologic observations indicate that most nerve cells are either destroyed during the acute stage of poliomyelitis infection or largely recover their normal appearance in about one month or less.

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POLIOMYELITIS: A REVIEW OF ITS NATURAL HISTORY

Robert Ward, M. D.

The Physiatherapy Review, Vol. 27, No 4, July-August, 1947.

Some of the results of important work that has been done in the field of poliomyelitis are presented to integrate them in a working hypothesis for epidemics.

The size of poliomyelitis virus is 8 to 30 millimicra, this determination being made by indirect methods. The action of physicochemical agents indicates it is one of the hardiest of viruses. It lives for years in the frozen state. Ordinary agents have little, if any, deleterious effect upon it. Sixty-five degrees centigrade for 30 minutes will inactivate the virus, and oxidizing agents such as hydrogen peroxide and potassium permanganate are said to kill the virus.

The pathogenicity ot the virus for various labroatory animals is an important characteristic in its identification. It is pathogenic for only man and various primates. No adaptation of virus direct from man to rodents has been confirmed. Some strains have been adapted from monkeys to cotton rats and mice.

The histopathology is not characteristic. Nerve cell necrosis, neuronophagia, and perivascular cellular infiltration are common to forms of encephalitis as well as poliomyelitis. The distribution of lesions is characteristic of no other disease.

Immunological studies disclose there are various strains of virus alike in all respects except their immunologic properties. The number of different strains is not known, but may be many. The portal of entry of the virus in the human body has long been a matter of study. The nose, alimentary tract, and skin are the three possibilities. At post-mortem examination the virus was found chiefly in the central nervous system and alimentary tract.

The virus is eliminated chiefly by way of intestinal excreta. It has also been found in material from the oropharynx.

Sewage has been found to contain poliomyelitis virus. The amount indicates it is the result of excretion by a considerable larger number of individuals than is made up of paralytic cases.

Flies have been suspected as possible carriers. They have been shown to be capable of depositing an infective quantity of virus on food in an epidemic. It is not known whether virus is carried mechanically or whether there may be a more intimate biological association.

The mode of spread is really unknown. It is probably spread in a number of different ways. The evidence is in favor of the alimentary tract as the portal of entry.

The tremendous concentration of cases during warm weather may be the result of increased dissemination of virus brought about by various factors, including insects such as flies.

Another hypothesis is presented: the epidemics are limited largely to certain countries, viz., Scandinavia, Holland, United States, Canada, Australia, and New Zealand. In certain other parts of the country the large seasonal epidemics seldom occur. In countries with primitive sanitation, the infant contacts the poliomyelitis virus at an early age. In areas with modern sanitary conditions early repeated exposure does not occur, and populations arise susceptible to the disease in epidemic form.

The author suggests that this idea might take on considerable substance if it could be shown (a) that virus is widely disseminated year in and year out in countries with primitive sanitation, and (b) that antibodies to the prevalent strains actually develop early amongst the native population.

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Arizona Medical Problems

CONSULTATION AND CASE ANALYSIS

ARIZONA MEDICINE again presents an unsolved and difficult case from the practice of Arizona physicians, with the Case-Analysis and comments of a specially-chosen and nationally-known Consultant.

Any physician who has an undiagnosed case which has defied other methods of solution may send it for consideration. The case should be completely worked up, but an editor will help compose the report. Whenever the need for an answer is urgent, the Consultant's reply will be sent direct to the submitting physician, before publication.

Please send communications and data to Dr. W. H. Oatway, Jr., 123 S. Stone Avenue, Tucson, Arizona, or care of The Editor, Arizona Medicine.

(NOTE—The progress of the first four cases is such that it is now possible to check the efficiency of the case-analysis of each. The results are eminently satisfactory.)

CASE NUMBER I

Male, 36 years of age, with lifelong gonadal, skin, and heart signs and symptoms. Diagnosis—Pituitary infantilism and an unrelated cardiac defect. Progress—Symptomatic response to hormones; death from cardiac decompensation. No necropsy.

CASE NUMBER II

Female, 32 years of age, with recurrent acute attacks of monarticular arthritis. Diagnosis—Episodic rheumatoid arthritis favored over palindromic rheumatism. Progress—Rapid progress of the symptoms and signs into ordinary rheumatoid arthritis, with cessation of the episodes.

CASE NUMBER THREE

Boy, 11 years of age, with fever, tumefaction of the skin and solid viscera, pleural effusions, and arthritis. Diagnosis—Atypical rheumatic fever. Progress—Clearing of all signs, symptoms, and contractures. Boy is in school and athletics. Heart normal.

CASE NUMBER IV

Female, 46 years of age, with chronic generalized neurovascular signs, pain from exercise, pressure, and cold, and a recent rash on exposed surfaces. Impression — Dermatomyositis; unrelated colitis, probably amebic. Progress—As expected in a collagen disease, probably dermatomyositis; response of the colitis to suitable therapy.

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(*The current case* was submitted by a Tucson physician. The report was then presented to a hospital staff-meeting, at which place the opinions of a half-dozen well-qualified specialists were obtained. The case-report, plus comments and data on further progress, was then sent for analysis to *Dr. Annette C. Washburne*, Associate Professor of Neuropsychiatry, at the University of Wisconsin Medical School and State of Wisconsin General Hospital. Dr. Washburne is a Diplomate of the American Boards in those subjects, and for more than ten years has made a special study of the anatomy, functions, and lesions of the hypothalamic area of the brain.)

CASE NUMBER V

The patient is a white male youth of 13 years who came to Arizona from his home in Chicago because of recurrent respiratory infections, associated with certain unusual symptoms and signs.

His chief complaints when first seen were fever, 'a cold in the nose,' 'sore glands' and 'a stiff neck.'

History of Present Illness—The illness had started during the previous 24 hours. The temperature was 102 degrees by rectum, the throat was seen to be red and edematous, the nasal mucosa was swollen ,all of the cervical glands were enlarged and tender, and the neck resisted flexion. The BP was 130/100. The boy was obese (chiefly in the hip areas), had small hands and feet, small genitalis, and no hair growth on the body.

A consultant agreed that the sinuses were not involved. A nasal smear showed a few W.B.C.,

no easinophiles, and a culture produced one colony of pneumococci. A white blood count was normal. There was no abnormal skin, heart, or lung signs.

He was kept at bed rest, and given penicillin I.M. at first in oil, and later in saline for a total 18,650, with 83% nuetrophiels. The urine was of three days without effect. He was then given ⅓ gm. of streptomycin every 4 hours for 3 days, also without effect. Sulfonamides were not used because of a previous urticarial reaction. He could open his mouth only with difficulty, disliked being bothered for care or examination, and was apparently very uncomfortable. The family objected to the use of intravenous medication, consultants, etc., so he was given intravenous fluids and protein only once, and several injections of a vitamin B. concentrate.

On the third and fourth days the condition was the same, plus a fever of 104 degrees, a mild vertigo, and a notable somnolence and lethargy. He refused food, but drank large quantities of fluids. He frequently groaned.

On the following day a confluent papular rash appeared on the arms, legs, and thighs, and diarrhea began. The rash was partly urticarial, and several crops occurred at intervals of 1 or 2 days. The stools were often foul, and sometilmes contained pus and blood; the bowel movements were usually involuntary, as was urination. The spleen was palpable on one occasion. A small ulcer was noted in the pharynx for a couple of days. There was a positive bilateral Babinski sign, and the patellar reflexes were absent. The Kernig sign was positive. The respirations were irregular in depth and frequency. The blood pressure was normal after the first readings. There were no abnormal cranial nerve or papillary signs.

All of the signs and symptoms continued, with some variation, until the tenth day, when rales were heard in the left chest and viscid, blood-streaked sputum was noted. The fever and WBC were less, however, and from then on all of the symptoms and signs subsided to normal. Blood cultures, agglutinations, throat and stool cultures, a spinal tap (on the 11th day), and two chest X-rays were found to be normal. An osteoporosis of the spine was noted on the film.

On the twelfth day, with the temperature normal, he abruptly seemed well.

Past Medical History—During the past 12 years and starting before he was two years of age, the patient has had about 80 attacks of an illness similar to the one just described. They have occurred at the rate of 6 or 7 per year, at an interval of 6 to 8 weeks in the winter and 2 to 4 months in the summer. The duration has always been 7 to 10 days, regardless of the treatment used; no treatment has been unusually helpful. The onset has always been that of an acute and febrile upper respiratory infection, and the attacks in infancy were restricted to that condition.

Gradually, however, several other features began to characterize the attacks. Some have occurred with each illness; others only 2 or 3 times a year. These features include, (1) Hunger and an increased food intake before the illness; (2) Rectal temperatures of 104-105 degrees for 7 to 10 days; (3) drowsiness to the point of stupor, from which he can usually be aroused; (4) marked polydipsia and polyuria (but anorexia) during the illness; (5) eruption of a rash (like erythema multiforme) on about the fourth day; (6) copious diarrhea, also on the fourth day, and often containing blood; (7) enlarged, tense, tender, cervical lymph-nodes; (8) an increasingly stiff neck; (9) pneumona, with bloody sputum; and (10) stiffness of all body musculature at the end of each illness. He is said to be irritable for a few days before each attack, but has a pleasant normal personality during the remainder of the intervals.

The patient reacted with "high temperatures" to diphtheria and whooping-cough immunizations during infancy, and on one occasion had a convulsion. At 3 years of age he had a 5-day febrile reaction following removal of the tonsils and adenoids, and again at the age of 6 years during a reoperation and the curettage of a sinus. At the age of 9 he had an "atypical scarlet fever," for which serum was given.

When he was 10 years of age, he was severely ill with measles, and had coma, delirium, and a high fever before the rash appeared. Convalescent-serum was given, but the symptoms continued for 4 more days. Five days later he developed mumps on the right side, complicated by a severe rheumatism and myositis, which lasted for ten days. These symptoms slowly subsided during the next six weeks and, after two weeks of recuperating, he was taken to the Illinois Research Hospital for a complete study by a pediatrician and his consultants. The only positive finding was a cloudy left sinus. The sinus was washed several times, treated with X-ray, but no bacteria were ever isolated. Following this, the boy rapidly gained weight and became obese, as he is now.

The family was somewhat discouraged by the indefinite results of the hospital examination, and treated the ensuing episodes with simple nursing care.

The patient has been mildly spastic since infancy, especially in the legs, and sits down and rises jerkily. He is not markedly handicapped, and can use his hands adequately. He has a congenital cataract of the right eye, and a ptosis of the right eyelid.

Family and Social History. The patient has lived in Chicago all his life. He has a brother 2 years of age who is said to have trouble digesting fats, and who tends to have diarrhea. His father is a physician. The boy has been retarded in school because of the illness, and is an "ungraded" room on the advice of a psychiatrist.

The only familial disease is an allergic tendency—the mother is sensitive to wheat, house-dust, and pollens; she is also hypothyroid. Two of the boy's cousins have asthma. The parents are of normal weight now, but the father was very obese as a child.

COMMENT

At this time, after seeing the patient through an acute episode and obtaining the past medical history, it seemed logical to suspect that the recurrent signs and symptoms might represent a syndrome arising from a common origin.

The case was discussed with several physicians, and a number of etiologic agents and conditions were considered—

1. Certain diseases and lesions could be ruled out because of the clinical course and negative findings, including acute encephalitis, various brain tumors, cysticercus, Hodgkin's disease, infectious granulomata, ordinary infections, exanthemata, and the meningitides.

2. Meningismus was obviously present, but is a symptum only, and may be caused by many conditions.

3. An allergic aspect was suggested by the urticarial nature of the rash, the reaction to sulfonamides and immunizing substances, and the family history of allergy. There is not, however, any major allergic manifestation, nor any eosinophilia. A purpuric condition would be a possibility, though notably atypical and incomplete.

4. An infectional cause for the episodes was sought, as it had been in the past. Although the signs and symptoms at the onset were those of an upper respiratory infection, a focus could not be found, and (except for a few pneumococci in the sputum) all cultures from the nose, throat, blood, urine, stools, and spinal-fluid were negative. The antibiotics were ineffective. Most of the symptoms increased while signs of infection were decreasing. The regular recurrences are not characteristic of simple infections.

5. Many of the manifestations have a common factor—the site of origin. Two areas in the brain contain the control centers of several functions which are abnormal in this case—the hypothalmus helps to regulate body heat and wakefulness; a reciprocal action exists between the hypothalamus and the hypophysis which regulates water balance, fat and carbohydrate metabolism. (The classic Froehlich's syndrome results from the latter relationship.) Further, a rash may result from a vaso-motor reaction, the effect of hypothalamic irritation through the vegetative nervous system.

(The nerve pathways and hormonal interplay of these two contiguous areas are complicated and somewhat obscure, and can not be elaborated here.)

The only function not known to be disturbed in this case is the CH metabolism, which was not investigated. (The patient returned to Chicago in less than a month.)

It is notable that the changes are almost all transient; the obesity could be on one of several other bases—orthopedic, dietary, etc. The intermittency would indicate a temporary irritation of the areas, with no permanent damage. There is no remarkable evidence that a damaged pituitary has effected changes through the thyroid, parathyroid, pancreas, adrenal, or testicular functions.

6. A "tumor" which might fit the circumstances was suggested by a consultant—a cystic craniopharyngioma. This tumor results from an imperfect closure of the craniopharyngeal duct —an outpouching of the buccal mucosa which unites with a pouch of the diencephalon from the hypophysis. They are congenital, often remain stable, and may result from trauma.

7. Modifying factors could, in theory, be the cause of cystic variation in size, with resultant periods of pressure on the nerve centers and episodes of symptoms. Infection might conveivably cause the cyst to swell, perhaps arriving by direct extention. Allergy might produce a local reaction, though the mechanism and reasons are not clear. An abnormal electrolyte and fluid balance could theoretically cause the same changes, though they could more possibly be results. The reasons for the periodicity and some of the symptoms are also not clear.

STAFF MEETING DISCUSSION

After the boy had returned to Chicago, it was decided to present the case at a hospital staff meeting, and obtain suggestions from the staff members. The case-report, plus the foregoing speculations, was read; the following comments (anonymous) were then recorded:

Dr. A (pediatrician)—I believe that the condition has an intra-cranial cause.

Dr. B (pediatrician)—I suggest investigation of the adrenal status.

Dr. C (E.E.N.T.)—The sphenoid sinus could be a cryptic focus of infection.

Dr. R (allergist)—Allergy could cause the entire picture. I have seen several similar attacks in highly sensitive patients who harbor bacteria somewhere; they cause an upper respiratory infection, an immunity for a month, then recurrence of the infection. I have one patient now who ends up in asthma, and is being controlled by culturing the 20 or more organisms in the throat and then desensitizing her to the predominant one.

Dr. E (arthrologist)—I agree that the hypothalamus-pituitary relationship is necessary to explain the episodes. A regional cystic tumor would be the logical cause of the rythmicity, and intra-cranial tests should be done to determine its presence. Allergy and/or water imbalance should be investigated to see what pulls the trigger on the attacks. Anti-histamine drugs, salt-modification diets, and even vaccines could be tried as therapeutic tests.

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Dr. G (neuropsychiatrist)—I am sorry not to have seen the child, since I was ill at the time of his attack. I believe that there are two possibilities: first, a ball-valve paraphyseal tumor of the third ventricle (it might be noted that such a tumor is an abnormal persistence of the velum transversum, rather than a derivative of the embryological paraphysis as commonly thought); the second, some kind of process which intermittently permits increased permeability of the hemato-encephalic barrier. It is at least conceivable that the latter process could be allergic in nature. These ideas are only hypothesis; one would have to rule out a colloid cyst, recurring encephalitis, localized meningitis, etc.

PROGRESS

The father was most grateful for the attention and suggestions. He considered the electrolyte-water-balance idea the most interesting, pursued therapy along those lines, and sent reports to the Arizona physician at intervals.

The illness in Tucson ended on March 13th, and the onset of the next attack in Chicago was on April 11th. It began with fever (101 degrees, rising in 2 days to 104 degrees), headache, "toxicity," pharyngitis, cervical adenitis, and stupor.

An acculate recor dof fluid intake and output was kept, and it was found that there was a negative balance of 500 cc., chiefly due to emeses and coincident diarrhea. Salt balance was poor.

A vigorous attempt was made (at home) to change the situation. On the third day of the illness, 600 cc. of plasma was given with no effect. On the fourth day 1,000 cc. of I-V glucose (5%) was given without effect. On the following day 1,000 cc. of glucose and 1,000 cc. of saline were given and, though the balance was still negative, the emesis and loose stools ceased and food and fluid intake by mouth began. Salt was added to the food, a positive fluid balance of 275 to 500 cc. was obtained, and the patient was out of bed in 3 days.

During the next four months only one attack occurred; this was aborted by a single I-V of plasma and saline. This is the longest free interval in years (but it should be noted that it is summer).

QUESTIONS TO CONSULTANT

What is the most likely primary diagnosis?

What parts do secondary conditions play in the clinical action?

What can be suggested to clarify the picture?

E. L., M. D., Tucson.

ANSWERS BY DR. WASHBURNE

This is an unusual case which has evidently had considerable study. The progress, through the years, suggests a basic condition plus one or more associated conditions. I am afraid that I cannot add much to the comments which have been made, though there are several things which seem to me to be of especial interest.

First: Do you have any information concerning the details of the delivery of this patient? A history of birth-injury would be helpful not only in explaining his spastic condition, but might also suggest the possible effects of cerebral trauma in producing a syndrome of the present type (similar, in an exaggerated way, to Carlson's experimental production of diabetes insipidus in dogs).

(Editor—There is a history of birth-injury, as well as the congenital changes of the right eye.)

Second: Could the patient be hospitalized during a time when he is free of symptoms so that studies could be carried out for contrast with those done during an episode. Such studies might include (a) an intravenous glucose tolerance test; (b) blood chloride, as well as serum cholesterol, calcium, and phosphorous levels; (c) cerebrospinal fluid examination, with pressure, chemistry, and cell determinations; (d) an electroencephalogram; and (e) a pneumogram. The last named might reveal very valuable information.

Concerning the various diagnostic suggestions, it appears to me that most self-contained, space-filling, intra-cranial lesions can be ruled out by the duration of the condition. There is, however, one exception which seems to me to be a fairly good bet—a ball-valve type of cyst having a ventricular connection. The periodic filling of such a cyst in the region of the third ventricle could theoretically produce nearly all of the symptoms and signs by pressure on the adjacent hypothalamus and antero-medio-dorsal thalamus. Its spontaneous emptying could, of course, explain the recovery periods.

Communicating cysts of this nature may exist over a period of many years without further progression of physical findings than those given; it could be caused by a birth-injury; its existence could be determined by a pneumogram.

The allergy and infection theories do not seem adequate by themselves to explain the marked clinical findings. Their standing as adjuncts in the production of the attacks would still have to be proved, in view of the absence of bacterial and allergic evildence in the past.

Meningismus is a symptom rather than an entity.

The respira'ory and gastro-intestinal symptoms are probably secondary, or resultant.

The hyperpyrexia may be explained on the walls of the third ventricle, on the so-called thermal centers; the drowsiness by direct or indirect pressure on the mammillary bodies or the medial antero-dorsal thalamus; the polydipsia from pressure on the anterior hypothalamus. The stiffness which follows the episodes could result from immobility of the spastic patient while ill.

If the family is unwilling to have detailed studies made, it is to be hoped that a pneumogram and electroencephalogram can be performed; they would be most serviceable in providing a diagnosis.

Annette C. Washburne, M. D.
Associate Professor of Neuropsychiatry, Madison, Wisconsin.

Arizona Blue Shield Plan

(Continued from November Issue)

SURGICAL AND OBSTETRICAL CARE SUBSCRIPTION AGREEMENT

ARTICLE I. DEFINITIONS AND PROVISIONS AS TO INCLUSION.

Section 1. The name of this Corporation is Arizona Blue Shield Medical Service hereinafter referred to as the CORPORATION or SERVICE.

Section 2. Applicant: The term "Applicant" refers to the person so listed on the application pursuant to which the SERVICE has entered into this Agreement.

Section 3. Family Member: Subject to the enrollment regulations of the SERVICE, the Applicant's spouse and any dependent unmarried child of the Applicant who is under the age of nineteen (19) years, are eligible for inclusion as subscribers hereunder provided that they reside with the Applicant. The term "family member" as herein used, shall mean such members of the Applicant's family as are eligible for inclusion hereunder and are included in the membership application or supplemental applications.

Section 4. Sponsored Dependents: Subject to the enrollment regulations of the SERVICE any member of the Applicant's household who is (1) related to applicant, (2) living with the Applicant, (3) wholly dependent on the Applicant for support, (4) unemployed, (5) in good health and (6) under sixty (60) years of age, is also eligible for inclusion as a subscriber hereunder; such member of the Applicant's household being sometimes referred to herein as "sponsored dependent."

Section 5. Subscriber: (A) The term "subscriber" refers to the Applicant, each Family Member, and each sponsored dependent, who is included hereunder in accordance with the provisions hereof.

(B) The subscribers included hereunder at the effective date hereof are the Applicant, the eligible family members, and sponsored dependents, if any, named in the application hereof. The Applicant may apply for the inclusion of additional eligible family members or sponsored dependents by submitting to the SERVICE a supplemental application and by the payment of such additional charge, if any, as the SERVICE may require, but the inclusion hereunder of such additional subscribers shall be subject to the enrollment regulations of the SERVICE then in force and shall not become effective until the supplemental application is accepted by the SERVICE.

(C) Subject to the enrollment regulations of the SERVICE, the Applicant may at any time withdraw any subscriber from this Agreement. In the event that any family member included as a subscriber hereunder shall establish a residence apart from the Applicant, such family member shall thereupon automatically be excluded from coverage hereunder. In the event any family member included as a subscriber hereunder is a child, such child shall automatically be excluded from coverage hereunder (1) at the end of the contract year in which he or she attains the age of nineteen (19) years, except that if such child then comes within the sponsored dependent class, as above defined, he or she may be continued as a subscriber hereunder, subject to the conditions hereof and to regulations of the SERVICE then in effect, or (2) immediately upon becoming married prior to the age of nineteen (19) years.

(D) In the event any subscriber covered hereunder ceases to live under the same roof with the Applicant, it shall be the responsibility of the Applicant to notify the SERVICE of such change in residence and no subscription charges for such subscriber shall be made after the subscription month in which such notice is given. No refund of subscription charges will be made by the SERVICE for any period prior to such notification by the Applicant.

(E) All Subscribers to this SERVICE must reside in an area regularly served by participating physicians. (See also VII—3.)

Section 6. Anniversary Date and Group:
(A) The term "Anniversary Date" shall mean the annual return of the day on which coverage was first effective for the original members of the group to which the Applicant belongs at the time involved, or such other day as may be agreed upon between the SERVICE and the group. If the applicant ceases to belong to a group, but continues his Agreement as provided in paragraph three (3) of Article IX hereof, the anniversary date shall be the date fixed by the SERVICE for such applicants.

(B) The term "group" shall mean a group of Applicants who have a Subscription Agreement with the SERVICE and who are employed by or associated with an individual, Corporation, Association, department or other organization which, as agent for the Applicants has agreed to the necessary procedures required by the SERVICE for the benefits established herein.

Section 7. Participating Physician: The term "participating physician" means any Doctor of Medicine who is duly licensed to practice medicine and surgery under the laws of the State of Arizona, who is a resident of Arizona, who is registered with the SERVICE as a participating physician and who has agreed to render services to the subscribers under this Plan.

Section 8. Remitting Agent: The term "remitting agent" means any individual, association, corporation or other organization which as agent for the Applicant has undertaken to collect the charges payable on account of this Agreement, either by way of payroll deduction or otherwise, and to remit the same to the SERVICE.

Section 9. Surgical Services: The phrase "surgical services" means all such medical and surgical services as are covered under the terms of Article IV hereof.

ARTICLE II. SUBSCRIPTION AGREEMENT, IDENTIFICATION CARD AND EFFECTIVE DATE OF COVERAGE.

Section 1. The Contract between the Applicant and the SERVICE by virtue of which the Applicant and any other subscriber is entitled to receive surgical services shall consist of the within Subscription Agreement, the application therefor (including any supplemental application) and Surgical Identification Card Series issued by the SERVICE. No employee or agent of this SERVICE is authorized to vary or change any of the terms of these instruments.

Section 2. Any gainfully employed person desiring to obtain the benefits of this service shall make written application therefor on forms furnished by the SERVICE. No such application shall become effective until it is approved by the SERVICE, which acceptance shall be evidenced by the issuance of a Surgical Service Identification Card bearing the name of the Applicant and of a Subscription Agreement executed in the name of the SERVICE by a duly authorized officer.

Section 3. (A) The effective date of coverage for the Applicant and subscribers listed on the original application card shall be the effective date entered by the SERVICE on such original application card.

(B) The effective date for subscribers who may be added from time to time shall be the effective date entered by the SERVICE on the supplemental application card listing such family members, which date shall be determined by the SERVICE'S enrollment procedures then in effect.

ARTICLE III. EFFECTIVE PERIOD—CONTRACT YEAR.

Section 1. The effective period of coverage for each subscriber hereunder is the period of one year from the effective date entered on the application card listing such subscriber and from year to year thereafter, subject, however, to provisions of ARTICLE VII and VIII hereof, and the term "Contract Year" shall mean the period of one year from the effective date entered on the application card and each yearly period thereafter while this AGREEMENT is in force, and shall not mean a calendar year.

ARTICLE IV. SURGICAL SERVICES AND INCOME LIMITATIONS.

Section 1. A subscriber is entitled to all surgical coverages included hereunder without charge to him by the participating physician provided the annual income of the subscriber does not exceed twenty-five hundred ($2500.00) dollars, and provided that the total annual incomes of subscriber and the members of his family do not exceed thirty-six hundred ($3600.00) dollars. If subscriber's individual or family income is above the limitations the participating physician will establish his fee in accordance with his usual practices and the SERVICE will pay that portion of the fee as set out in the Schedule of Benefits. In the event the fee exceeds the amount set out in the schedule of benefits the subscriber shall pay this difference directly to the physician.

Section 2. In the event of any dispute between a participating physician and any subscriber with respect to the income of the subscriber, such dispute shall be submitted to and determined by the Professional Committee whose determination, upon approval from the Board of Directors, shall be conclusive upon the parties.

Section 3. Subject to the foregoing provisions, the subscriber while and if a patient in a general hospital, approved by the Board of Directors, shall be entitled to the following services:

(A) Necessary operative (cutting) procedures performed by a participating physician for the treatment of diseases and injuries and for the treatment of fractures and dislocations but not including sprains and bruises.

(B) Necessary anesthesia by a participating physician in connection with services described in (A) but not to exceed twenty-five ($25.00) dollars for any one disease or injury or fifty ($50.00) dollars in amount for any one subscriber in any one contract year.

(C) Obstetrical care by a participating physician to the wife, provided both husband and wife have been subscribers under a Family Agreement for nine (9) full consecutive months immediately prior to the rendering of such obstetrical care. Children in the family and sponsored dependents are not eligible for obstetrical care. The term "obstetrical care" shall include necessary services of a participating physician for any condition of pregnancy, including Caesarean Section, miscarriage or ectopic pregnancy.

(D) Surgical Services will be provided on an out-patient basis for the initial treatment of emergency accident cases within 24 hours of accident. OUT-PATIENT SERVICE WILL NOT BE PROVIDED EXCEPT AS STATED IN THIS PARAGRAPH.

(E) At the time surgical or other services are required, the subscriber shall inform the participating physician that he is a subscriber to the SERVICE, and present his or her Identification Card.

(F) The Corporation will make payment, according to its Schedule of Benefits, direct to the participating physician, or physicians, performing the services provided by this Agreement. Such payment shall constitute a full and final discharge of all obligations of the Corporation for such services.

Section 4. Services not Included:

The benefits and services offered and provided by this Agreement do not, and shall not, in any event, include the following:

(A) Home calls by any physician or surgeon.

(B) Plastic operations for cosmetic or beautifying purposes.

(C) Dental surgery.

(D) Services provided for under the Workmen's Compensation Laws of any State or municipality or the Employer's Compensation or Liability Acts under Federal Statutes whether or not the employee or employer has rejected such acts.

(E) Any surgical services rendered for the removal of tonsils or adenoids, or the treatment of hernias and hemorrhoids during the first six full consecmutive months of this Agreement.

(F) Surgical services rendered in the treatment of any congenital defects.

(G) Any surgical services rendered for the treatment of cancer, diabetes, osteomyelitis, tuberculosis, poliomyelitis, sinus conditions or deafness, to individuals who have had such conditions prior to, or at the time of, their application for membership.

(H) Surgical services rendered for any ailment or physical conditions known by the subscriber to exist prior to the date of application for this subscription agreement.

(I) Services rendered by any other than a duly recognized Doctor of Medicine and so licensed to practice medicine and surgery in the State of Arizona.

(J) Surgical or Obstetrical Services rendered in any place or institution other than a General Hospital, approved by the Board of Directors.

Section 5. The SERVICE shall not be liable in any event for services furnished by the Veteran's Administration or the United States Government, except to the extent that the service assumes such a liability by contract with the Veteran's Administration.

Section 6. This agreement shall not in any event include or provide hospital services, nursing fees, medicine, drugs, materials, appliances or supplies other than those usually furnished by the physician, diagnostic procedures, eye glasses, or payments to donors of blood.

Section 7. Surgical services will not be available hereunder to any subscriber who is in a hospital on the effective date of coverage hereunder for the particular disease or injury causing such hospitalization or confinement.

ARTICLE V. SUBSCRIBER'S SELECTION OF PHYSICIAN.

Section 1. Subject to the provisions of Article I, Section 7 hereof, the subscriber shall be free to select for the rendering of services under this Agreement any participating physician. No attempt shall be made by the SERVICE or any of the officers, directors or agents to influence the choice of a participating physician by any subscriber. For the purpose of determining whether a Doctor is a participating physician, the subscriber shall be entitled to the current roster of participating physicians, issued by the SERVICE, upon request. A participating physician shall be free to decline to render services to a subscriber in accordance with the custom and practice now prevailing in the general practice of medicine. Nothing contained herein shall in anywise affect the ordinary relationship that exists in the community between a physician and his patient, except, however, as to the waiver of privileged communications contained in the application herefor and in ARTICLE VI hereof.

Section 2. The services of a consultant shall be made available to a subscriber upon certification of the need therefor by the subscriber's participating physician and approval of the Service. Thereupon a consultant shall be selected from the list of the SERVICE'S participating physicians in the same manner as now prevails in the general practice of medicine. Such services shall be limited to one consultation per case.

Section 3. Emergency Service: In the event of emergency treatment for accident or illness occurring while a subscriber is temporarily absent from home and not within reasonable access to a participating physician and for which the subscriber is entitled to surgical services under ARTICLE IV hereof, the SERVICE will pay any duly licensed Doctor of Medicine rendering such emergency treatment an amount not to exceed the compensation which a participating physician in such case would have been entitled to receive from the SERVICE, and such payment shall fully discharge the SERVICE of all its obligations hereunder on account of such treatment. This provision does not include surgical services performed outside the area regularly served by participating physicians if the subscriber has left such area for the purpose of obtaining treatment or examination.

ARTICLE VI. WAIVER OF PRIVILEGED COMMUNICATIONS.

Section 1. This Agreement is made upon the express condition that any physician or institution is authorized to disclose to the SERVICE any information regarding or acquired in connection with attendance, care or treatment of any subscriber hereunder and that all provisions of law or professional ethics forbidding such disclosures are waived by or in behalf of each subscriber hereunder.

ARTICLE VII. TERMINATIONS.

Section 1. (A) Nothing in this Agreement shall be construed as a guarantee that the service of a participating physician shall be available to the subscriber.

(B) If, by reason of war, public disaster, general epidemic or other public emergency, or for any other reason, no participating physicians are available to render necessary surgical services to a subscriber hereunder, the SERVICE upon request shall refund to the Applicant the charges which have been paid on account of this Agreement for the then current contract year, and such payment shall constitute a full and final discharge of all obligations of the SERVICE hereunder for the period covered by such refund.

Section 2. This Agreement may be terminated by either party hereto at any time by giving twenty days prior written notice to the other; provided, however, that the SERVICE may not exercise its right of termination while a subscriber shall be receiving surgical services. Such notice of termination, if given by the SERVICE, shall be sufficient if mailed twenty days in advance of the termination date therein specified to the Applicant at his address as it then appears on the records of the SERVICE, and, if given by the Applicant, if so mailed to the SERVICE at its principal office in Phoenix, Arizona.

Section 3. If the Applicant establishes his residence outside of an area regularly served by participating physicians, this Agreement shall thereupon be automatically terminated.

Section 4. In the event of any default in the payment to the SERVICE of charges hereon in accordance with the provisions hereof, this Agreement shall automatically terminate at midnight of the day of such default.

Section 5. After termination of this Agreement, no subscriber shall be entitled to any further services hereunder.

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ARTICLE VIII. SUBSCRIPTION CHARGES AND MODIFICATIONS.

Section 1. The amount of the Subscription charges for subscribers shall be such as may be determined by the SERVICE from time to time.

Section 2. (A) The SERVICE shall have the right from time to time to make such changes in the amount of the charges applicable to the agreement and to amend or modify any of the terms or provisions of this agreement, provided however, that the applicant shall be notified of such action by written notice as hereinafter provided. If any such change or modification is not acceptable to the applicant, this agreement shall automatically terminate at midnight on the effective date of such change or modification.

(B) Notice of change or modification shall be deemed sufficient if mailed to the remitting agent for the Applicant's group or, in the case of Applicants who are making payments direct to this SESRVICE as provide din ARTICLE IX, Section 3 hereof, if mailed to the Applicant at his address as it appears on the records of this SERVICE, and in either event, mailed at least twenty (20) days prior to the effective date of such change or modification.

(C) After such notice, the continued payment by the Applicant of the Subscription charges shall be conclusive proof of his or her agreement to such changes or modifications.

Section 3. The basis of payment of the subscription charges by each group whether monthly, quarter-annually, semi-annually, or annually, shall be determined by agreement between the SERVICE and the remitting agent for the group, according to current enrollment regulations, and each Applicant in a group shall pay his or her subscription charges in the same manner and for the same period as all other members of the group.

ARTICLE IX. MISCELLANEOUS PROVISIONS.

Section 1. Reinstatement: In the event this Subscription Agreement shall terminate, it shall be subject to reinstatement in the sole discretion of the SERVICE and upon such terms and conditions as may be determined by the SERVICE.

Section 2. Assignment: This Subscription Agreement and the rights hereunder are personal to the subscriber and in no way assignable.

Section 3. Change of Remitting Agent: An applicant who leaves a group after the payment of at least one month's charges in the manner prescribed for the group may continue this Agreement in force whether re-employed or not by making his regular payments, plus any service charges established by the SERVICE, directly to the SERVICE on a quarter-annual, semi-annual or annual basis. IN THE EVENT A SUBSCRIBER AGAIN BECOMES A MEMBER OF A GROUP ENROLLED IN THIS PLAN, HE OR SHE SHALL BE REQUIRED TO MAKE PAYMENT THROUGH THE GROUP REMITTING AGENT IN THE MANNER PRESCRIBED FOR SUCH GROUP.

Section 4. Death of Applicant: In the event of the death of the Applicant, this Agreement may be continued, (Subject to the payment of charges when due) as to all other subscribers hereunder who maintain their residence as required in Article VII, Paragraph 3 hereof, until the end of the then current contract year, whereupon this Agreement shall terminate, subject to the right of any of the surviving subscribers hereunder to submit a new application for a Subscription Agreement, if any of them are eligible in accordance with the SERVICE'S then prevailing regulations.

Section 5. Extent of SERVICE'S Obligation: The SERVICE has no control over any diagnosis, treatment or care by a participating physician or the methods used in connection therewith, and shall not be liable for any negligence or malpractice on the part of any physician. Neither the Applicant nor any other subscriber hereunder shall have any right against or be entitled to any benefits from the SERVICE, except the right to receive the financial benefits herein provided for.

Section 6. No subscriber shall be entitled to share in any reserves or other funds which may be accumulated by the SERVICE except as the services available hereunder may be extended by action of the Board of Directors of this SERVICE.

Section 7. The applicant shall be responsible for the payment of all sales, service or other tax now or hereafter imposed by law.

Section 8. In the event the remitting agent shall default for any reason in making payment to the SERVICE of the charges payable under this Agreement, or in the event the remitting agent gives notice to the SERVICE of its intention not to collect and remit such charges, this Agreement shall terminate at the end of the period for which charges have been paid.

SCHEDULE OF BENEFITS

The amounts listed in this Schedule of Benefits are set up for payment of physicians providing service to Blue Shield members as provided in the Subscription Agreement, in which service in full is provided for those within the income limitations or indemnity benefits to those of higher incomes. They do not represent average fees nor do they constitute an established fee schedule. Fees for all services are not listed. They will be determined by experience. All fees are subject to change as experience dictates.

All fees for surgery shall include the usual after care.

HEAD:	
Simple trephine	100.00
Ventricular puncture for encephalography	75.00
Epidural lesions	100.00
Subdural lesions (hematoma or abscess)	150.00
Any operation involving invasion of brain structure	200.00
Brain tumors and elective brain surgery by special arrangement.	
THORAX:	
Excision of breast tumor	50.00
Excision of breast	100.00
Excision of breast with axillary glands	150.00
Resection of rib	75.00
Thoroscoplasty, per stage (not to exceed $200.00)	75.00
Lobectomies and pneumonectomy by special arrangement.	
ABDOMEN:	
Exploratory laparotomy	100.00
Appendectomy	100.00
Bowel Resection	150.00
Cholecystectomy	150.00
Cholecystotomy	150.00
Hernia, radical operation and examinations	100.00
(Same for inguinal, femoral, umbilical or ventral)	
Bi-lateral hernia, radical operation and examinations	150.00

Gastro-enterostomies 150.00
Partial Gastrectomies 150.00
Spleenectomy 200.00

SPINE:
Spinal fusion 200.00
Laminectomy, to include casts 175.00
Extrusion of intervertebral disc, including laminectomy and spinal fusion, to include casts 250.00
Laminectomy, with spinal fusion, to include casts 250.00

EXTREMITIES:
Amputations:
Finger or toe 30.00
Arm or forearm 75.00
Shoulder disarticulation 100.00
Leg (at or below knee) 75.00
Thigh 100.00
Hip disarticulation 175.00

In case of more than one amputation of the same member, the fee shall be the major one, plus an additional 30 per cent; if of other members, an additional 50 per cent.

Cuts, contusion, etc., of other members will be considered a part of major injury, and treatment thereof shall not be charged for separately.

GENITO URINARY:
Nephrectomy 200.00
Nephrotomy 175.00
Nephropexy 125.00
External urethrotomy 100.00
Repair of ruptured urethra 100.00
Perirenal abscess 100.00
Prostatectomy 175.00
Cystotomy 100.00
Amputation of penis 100.00
Orchidectomy 75.00
Hydrocele, radical operation 75.00
Varicocele, radical operation 50.00

SKIN GRAFT:
Thiersch or Riverdin:
Small (approximately 1 to 3 sq. in.) 25.00
Medium (approximately 4 to 25 sq. in.) 50.00
Large (over 25 sq. in.) 100.00
Full thickness: Twice the above fee
Excision of subdeltoid bursa 75.00

BURSAE:
Tube pedicle by special arrangement
Excision of prepatella bursa 50.00
Excision of olecranon bursa 35.00
Removal of ganglion 35.00
Excision of nail, finger or toe 5.00

ARTHROTOMIES AND RESECTIONS:
Corpal, torsal, wrist or ankle 75.00
Elbow, shoulder or hip 175.00
Subtalar arthrodesis 150.00
Removal of semilunar cartilage 150.00

MISCELLANEOUS
Fistula in ano 35.00
Excision of pilonidal cyst 75.00
Excision of ischio-rectal abscess 75.00
Hemorrhoidectomy 75.00

GENERAL SURGICAL PROCEDURE

WOUND REPAIR:
Simple Repair 10.00

TENDON REPAIR:
When severed, first 35.00
Each additional 15.00

NERVE REPAIR:
When severed, first 50.00
Each additional 25.00

(When there are multiple nerve and tendon injuries in the same wound, the fee for the first nerve repair shall prevail, and additional nerve and tendon repairs shall be at the lesser fee. In such cases no extra charge shall be made for muscle, fascia or skin repair of this wound.)

INCISION AND DRAINAGE:
Incision for superficial abscess, as furuncle or boil 5.00
Incision for deep abscess, requiring general anesthetic 25.00
Paronychia 5.00

FOREIGN BODIES:
Foreign body extraction, subcutaneous with anesthetic 10.00
Foreign body extraction, deep 25.00
Note: above extractions do not include removal of foreign body from eye or orbit or body cavities.

MANIPULATIONS, ASPIRATIONS AND INJECTIONS

MANIPULATIONS:
Manipulation of the spine under anesthetic 25.00
Manipulation of large joints, such as ankle, knee, hip, wrist, elbow or shoulder 15.00
All other manipulations under anesthetic 10.00

ASPIRATION:
Elbow, knee or ankle joint 15.00
Bursa, subdeltoid or Subacromial, first 10.00
Subsequent 5.00
Bursa, olecranon or prepatello, first 5.00
Subsequent 3.00
Thorax, diagnostic 10.00
Therapeutic 20.00
Pericardium 25.00
Abdomen 15.00
Hydrocele 10.00
Subsequent 5.00

Injection:
Injection of brusa, same as for aspiration
Paravertebral, sacral or introspinal injections, first 10.00

FRACTURES:

Skull:
Without depression 50.00
Operation without the dura 100.00
Operation within the dura 150.00

Facial:
Maxilla, malar or zygoma, open surgery 75.00
Mandible, uni-lateral 50.00
Mandible, bi-lateral 100.00
Nasal 25.00

Thorax:
Ribs, one 15.00
Each additional add 50%-maximum 30.00
(if lung injury involved, special rates to apply)
Sternum 25.00
(if cartilage injury involved, special rates to apply)

Spine:
Vertebral body with definite compression of body or neural arch 100.00
Compression or dislocation with cord injury 150.00
Transverse, spinous or articular process, one or more 50.00
Pelvis 75.00
Sacrum 50.00
Coccyx 50.00

Upper Extremities:
Finger, simple reduction and immobilization 15.00
Finger, with displacement requiring reduction 25.00

XUM

With complicating lacerations of the soft tissues 30.00
(For each additional finger add 30% of the specified fee)
Metacarpal, without displacement 20.00
Metacarpal, with displacement 30.00
(For each additional metacarpal add 30% of the specified fee)
Carpal, closed 25.00
Carpal, open 75.00
Radius or ulna 50.00
Radius and ulna shaft 75.00
Bone graft, forearm 175.00
Colles's fracture 50.00
Humerus, closed 75.00
Humerus, open 150.00
Bone graft, humerus 200.00
Scapula 50.00
Clavicle 50.00

Lower Extremities:
Great toe, simple reduction and immobilization 15.00
With displacement requiring reduction 25.00
With complicating lacerations of the tissue 30.00
Other toes 10.00
With complicating lacerations of the soft tissues 25.00
(For each additional toe add 30% to the specified fee)
Metatarsal, without displacement 20.00
Metatarsal, with displacement 30.00
(For each additional metatarsal add 30% of the specified fee)
Astragalus 35.00
Os calcis, without displacement 40.00
Os calcis, with displacement requiring fraction 75.00
Other tarsal bones 25.00
Tibia 75.00
Bone graft, tibia 175.00
Fibula 25.00
Tibia and fibula, shaft 100.00
Potts fracture 75.00
Internal malleolus 35.00
Patella, closed 50.00
Patella, open 100.00
Femur 100.00
Bone graft, femur 175.00

When skeletal traction is required, add 25% of the usual fee.

For open reduction add 50% of the usual fee, except as otherwise specified.

Chip fractures incomplete fractures, or fractures with no significant change in position or alignment, and requiring only immobilization, shall be charged at 50% of the usual fee, except as otherwise specified.

In all cases the condition of the fracture is to be shown by x-ray both before and after reduction.

When closed reduction is unsuccessful and skeletal traction or open reduction is required, the total charge, when all procedures are carried out by the same surgeon, shall be 75% of the combined fees.

DISLOCATIONS:
Mandible 15.00
Spine, follow fracture fees.
Finger 10.00
Wrist 25.00
Elbow 35.00
Shoulder, primary 40.00
Shoulder, recurrent 10.00
Acromioclavicular 25.00
Stenoclavicular 25.00
Toe 10.00
Ankle 40.00
Knee 50.00
Patella 25.00
Hip 75.00
In case of fracture-dislocation, the major fee will apply.

CASTS:
Wrist (elbow to hand) 5.00
Upper extremity (shoulder to hand) 10.00
Body spica, one shoulder 15.00
Body spica, including both shoulders 20.00
Ankles (knee to toes) 5.00
Lower extremity (hip to toes) 10.00
For walking iron, add 5.00
Unilateral spica, including hip 15.00
Spica, including both hips 20.00
Trunk cast 15.00
Trunk cast, including neck and head 25.00

The above fees are to be in addition to the actual cost of materials used, and apply to casts subsequent to the first.

When supplies are furnished by the attending physician, see hospital schedule for fees for materials.

EYE SPECIALTY:
Removal of foreign body, unembedded 3.00
Removal of foreign body embedded in cornea or sclera 5.00
Removel of intra-ocular foreign body 100.00
Iridectomy 75.00
Excision of prolapsed iris 60.00
Cataract extraction 150.00
Cataract discission (needling) 35.00
Enucleation 75.00
Evisceration 1.00
Primary suture of lid wound 15.00
Chalazion 10.00
Operation for ectropion, traumatic 50.00
Operation for entropion, traumatic 50.00
Dacryocystectomy 75.00
Pterygium 35.00
Conjunctivoplasty 35.00

NOSE, EAR AND THROAT:
Nose:
Removal of foreign body 5.00
Epistaxis with electro coagulation 10.00
Submucous resection 75.00
Turbinectomy 50.00
Antrotomy:
Puncture with irrigation 10.00
Window 50.00
Subsequent 5.00

Ear:
Removal of foreign body from external canal 5.00
Primary repair of auricle involving cartilage 15.00
Myringotomy 5.00
Mastoidectomy:
Simple 100.00
Radical 150.00
Catheterization of eustachian tube 5.00
Bi-lateral 7.50

Throat:
Removal of foreign body from throat 5.00
Removal of foreign body from nasal
Tonsillectomy, including local anesthetic 35.00
Tracheotomy 75.00
Intubation 25.00

ANESTHETIST:
Either, minimum fee for one hour or less 12.00
For each additional 15 minutes 2.50
Gas, minimum fee for one hour or less 12.00
For each additional 15 minutes 3.00
Intravenous, for one hour or less 12.00
For each additional 15 minutes 3.00

Spinal and rectal—Same as for intravenous
Any general anesthetic for minor operations, 15 minutes or less 5.00

Local anesthetic to be considered part of the operative fee.

The period of time to be measured from the beginning of induction of anesthetic to recorded end of operation.

SPECIAL DIAGNOSTIC AND THERAPEUTIC PROCEDURE

Esophagoscopy	50.00
Gastroscopy	50.00
postnatal care)	100.00
Laryngoscopy	25.00
Bronchoscopy	50.00
Spinal puncture	10.00
Spinal puncture with manometric determination	15.00
Combined spinal puncture	20.00
Cisternal puncture	25.00
Cystoscopy, including catheterization: Without x-ray	25.00

GYNECOLOGY:

Hysterectomy	150.00
Dilation and curettage	50.00
Perineorrhaphy	100.00
Bartholin Gland, incision	10.00
Bartholin Gland, excision	25.00
Conization of cervix	25.00

OBSTETRICS:

Normal Delivery (includes prenatal and postnatal care)	150.00
Caesarean section	150.00

CONSULTATION 12.00

The services of a consultant shall be made available to a subscriber upon certification of the need therefor by subscriber's participating physician and approval by the Service.

In the event that more than one surgical operation is performed at the same time, payment will be made only for the operation for which the largest amount is allowed in the Schedule of Benefits.

For any operation or procedure not listed in this schedule, Blue Shield reserves the right, in its sole discretion, to determine the amount of service credit, if any, to be allowed.

For any Surgical or Obstetrical Care for which no benefits are listed on the foregoing schedule, or in the more complete list which is available for inspection in the offices of Arizona Blue Shield, the SERVICE reserves the right in its sole discretion, to determine the amount of service credit, if any, to be allowed.

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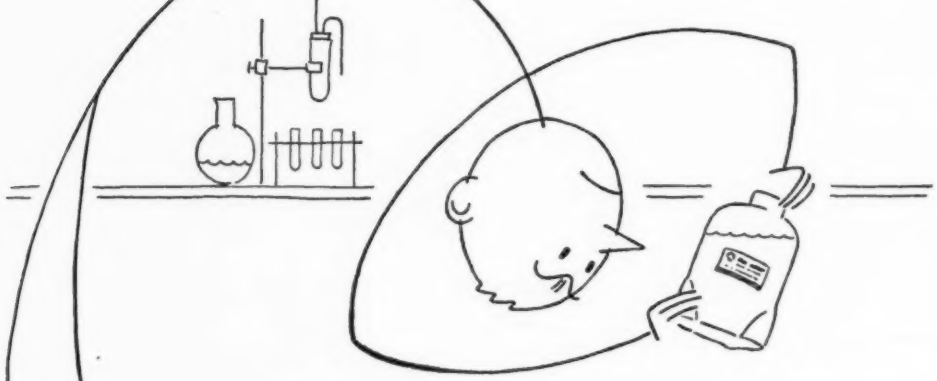

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ARIZONA MEDICINE

Journal of

ARIZONA STATE MEDICAL ASSOCIATION

Vol. 5 January, 1948 No. 1

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ADVERTISING and SUBSCRIPTION OFFICES
J. N. McMEEKIN, Business Manager, 427 Heard Building
Published at 142 South Central Avenue
Phoenix, Arizona

Eastern Representative:
Cooperative Medical Advertising Bureau
535 N. Dearborn St., Chicago

Editorials

How Your Tax Money Is Being Spent

All physicians detest politics and are loath to listen to any subject which pertains to it. But as a group they rank very high in this country in the payment of income tax as revealed by the U. S. Bureau of Internal Revenue. So they should be interested at least in how this tax money is being spent. Elsewhere in this issue is an address delivered by the Hon. Forest A. Harness, Representative in Congress from the Fifth Indiana District, before the National Conference of the National Physicians Committee in Chicago September 29, 1947. It is a well known fact now that the Communist Party has designated the socialization of medicine as one of the three major objectives in the establishment of a world revolution program. And it is no secret that fellow travelers have infiltrated the Social Security Agency, the Childrens Bureau, the Department of Agriculture, as well as many other government bureaus in Washington. In the report of the Sub-committee in Publicity and Propaganda of the House Committee on Expenditures of Executive Departments there is this finding: "Each year $75,000,000 is being spent and 45,000 federal employees are engaged full or part time in propaganda activities." Mr. Harness points out how these various federal agencies keep the government printing presses, which occupy 33 acres of floor space in Washington and employs 7,900 full time workers, busy turning out this propaganda.

And every bit of material that comes out of these various agencies pertaining to medical care advocates and urges the establishment of compulsory health insurance and complete socialization of medical care in this country. And this is being done in spite of the fact that Congress insists that there is a clear line of distinction between legitimate information and information which tends to formulate public opinion in favor of controversial legislation.

Furthermore, these same federal employees appear as witnesses before Congrssional committees, and lobby to no end for their desired legislation. But according to the new anti-lobbying act passed recently by Congress, if you as a private citizen or a representative of any organization wish to visit Washington to influence legislation in any way, you must register under the provisions of this bill and give full account of any money you spend, and from whence you obtained it, or you are liable to fine and imprisonment.

Of further interest in this campaign for world revolution is a new book entitled "140 Million Patients" by Mr. Carl Malmberg. Mr. Malmberg has been a public relations advisor and information specialist for the U. S. Public Health Services. And Mr. Malmberg uses all arguments that have been used by the Communists, the fellow travelers, and all other proponents of compulsory health insurance and socialized medicine. His book is a nice indictment of the whole medical profession of this country.

And it is your income tax money which finances these bureaus, pays the salaries of these employees, and pays for the printing of the propaganda which is being used in the attempt to destroy the profession you represent, and the highest type of medical care that exists in the world today.

Announcement of Van Meter Prize Award

The American Association for the Study of Goiter again offers the Van Meter Prize Award of Three Hundred Dollars and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The Award will be made at the annual meeting of the Association which will be

(Continued on Page 95)

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SATURDAY AFTERNOONS AND SUNDAYS EXCEPTED

(Continued from Page 93)

held in Toronto, Canada, May 6th, 7th, 8th, 1948 providing essays of sufficient merit are presented in competition.

The competing essays may cover either clinical or research investigations; should not exceed three thousand words in length; must be presented in English; and a type-written double-spaced copy sent to the corresponding secretary, Dr. T. C. Davison, 207 Doctors Building, Atlanta 3, Georgia not later than February 1st, 1948. The committee, who will review the manuscripts, is composed of men well qualified to judge the merits of the competing essays.

A place will be reserved on the program of the annual meeting for presentation of the Prize Award Essay by the author if it is possible for him to attend. The essay will be published in the annual Proceedings of the Association. This will not prevent its further publication, however, in any Journal selected by the author.

Respectfully submitted,
T. C. DAVISON,
Corresponding Secretary,
Amer. Asso. for the Study of Goiter.

THE PATIENT IS GRAVELY ILL! Something must be done to strengthen the right arm. The patient referred to is medical service, and the right arm is the nursing profession. Medical Schools and Colleges are crowded with young men and women preparing themselves to be physicians and surgeons. That is good! But what about the rapidly dwindling numbers of young men and women who are selecting the important career of nursing?

This problem should be one of particular interest to the medical profession. The high plane of medical care which prevails in these United states would not be possible without efficient nursing care. The relative scarcity of graduate nurses available for service to patients in homes and in private hospitals has already reached a danger point in many communities. Schools for nurses in general are having more or less difficulty in filling their classes with applicants.

The history of nursing has been a glorious one in peace, in war, and in disaster. Great names such as Florence Nightingale and Clara Barton, illuminate the pages of that history. It is our duty as physicians to aid in every way we can to preserve the continuity of that record. Organized medical societies and the Woman's Auxiliary can lend their support to well-conceived plans for improvement in general and specific conditions for student and graduate nurses. We must encourage our young people to enter the nursing profession, and should continue to support them once they have entered their career. In most instances good nursing schools of today offer a pleasant atmosphere, adequate recreation, and time for outside interests while learning a profession. The training given develops character, especially in tolerance, self control, self discipline, initiative, poise, compassion, and the ability to get along with people. Good nurses are indispensable to good medicine. Theirs is a great heritage.

The radio networks are emphasizing the need for nurses daily. Let us as a profession get solidly behind this problem!

Baruch Proposes 15-Point Program to Improve Nation's Health

Addressing approximately 600 physicians and hospital administrators attending a dinner celebrating the progress of Associated Hospital Service—New York's Blue Cross Plan and its affiliate, United Medical Service, at the Hotel Biltmore, New York City, November 19, Bernard M. Baruch called on the medical profession to assume leadership in providing better health for the people of America, outlining a 15 point program for improving medical and hospital services with provisions for government-financed protection for needy individuals.

Sponsors of the dinner were the Medical Society of the State of New York, the Coordinating Council of the Five County Medical Societies of Greater New York, and the Greater New York Hospital Association. Mr. Baruch's speech was broadcast over Station WCBS.

Congratulatory messages on the progress of the health plans were received from Governor Thomas E. Dewey and other notables, including aspirants for the presidential nomination. The messages were read by Dr. William B. Rawls, of the Coordinating Council of the Five County Medical Societies, who acted as chairman. Among those who sent congratulations were former Governor Harold E. Stassen, United States Senators Arthur H. Vanderberg, Joseph H. Ball, and Irving M. Ives; Secretary of

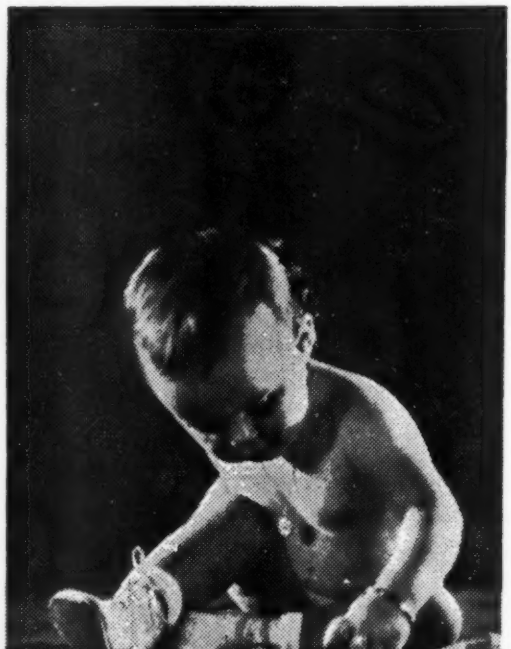
(Continued on Page 97)

XUM

The Borden Pledge

"... to keep always in mind our original purpose —to produce milk that meets, first of all, the health needs of tiny children. By so doing, to offer to people of all ages milk that fulfills these highest standards of wholesomeness, richness and purity.

"To maintain Borden leadership in scientific and sanitary requirements, to deliver this vital food to you when you need it, regardless of difficulties. Finally, to bring Borden's to you at a price that will enable millions to enjoy milk that can be depended upon ... always."



1858 - 1948

Borden's

FINE DAIRY PRODUCTS

(Continued from Page 95)

Labor Lewis B. Schwellenbach, Surgeon General Thomas Parran, the Reverend Dr. Harry Emerson Fosdick, and Alfred P. Sloan, Jr.

Pointing out that many doctors have been fighting a "rear guard action" in providing medical care for all classes of the people, Mr. Baruch urged that the medical profession accede to the public demand for more and better medical services. He also stressed the need for cooperation with the government in obtaining government aid where necessary.

Among the steps he specifically advocated were a survey to modernize medical education with greater emphasis on chronic and degenerative diseases, mental hygiene, and preventive medicine; fewer specialists and more general practiitoners; the reorganization of medical practice with emphasis on group medicine and voluntary insurance; a new cabinet post for health, education, and social security; and the creation of a non-political watchdog committee to safeguard progress in medical care for veterans.

Referring to the need for government aid in raising medical educational standards, Mr. Baruch said: "If science and medicine ask the Government for aid, which even the conservative deems necessary, they must expect he who pays the fiddler will call the tune. This means the government will rightly insist on no discrimination in medical care because of race, color, or creed. It will rightly insist upon opportunity for all to enter the profession and advance on the sole basis of ability and character, without restrictions of race, color, creed, or sex. And, I hope, without fear of, or favor from, the State."

Mr. Baruch congratulated the physicians on their part in proving voluntary health insurance to be "a sound practical way" of financing health services. Although, he said, they might in time serve the needs of the bulk of the people, he nevertheless voiced concern for "that sizeable segment of society which does not earn enough to pay for voluntary insurance."

To provide for this group he recommended a program partially financed by the government. to be administered by a body of doctors and non-doctors to keep medical care as free from politics as possible. He suggested a form of health insurance with adequate safeguards for those who cannot pay for voluntary insurance. This can be achieved, he said, without involving "what has been termed 'socialized medicine.'"

"The needs can be met, as in other fields, without the government taking over medicine, something I would fiercely oppose," he said.

Mr. Baruch paid tribute to General Omar Bradley and General Paul Hawley for their conduct of the Veterans Administration health program and urged the medical profession to "preserve the ground so arduously gained."

Reprinted from New York Medicine.

The Executive Secretary

The Council in session on November 23 elected Mr. Alan Jackson of Wayne, Michigan to the position of Executive Secretary for the association. Mr. Jackson was present for an interview at that time and accepted the appointment to assume the duties of the office on December 15.

Mr. Jackson, while not an Arizona resident, is a graduate of the University of Arizona, class of 1940, and received his Master's Degree in social administration from the Western Reserve University at Cleveland. He is a veteran of World War II, serving three years with the U. S. Navy in the Pacific Theatre of War. Since discharge from the service Mr. Jackson has been employed at Wayne, Michigan in activities allied with the medical profession in social aspects. The

(Continued on Page 99)

What You Should

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Federal Savings and Loan Associations are chartered and supervised by the United States Government. Each Association is a separate locally-owned, locally-managed institution, and its accounts are insured by the Federal Savings and Loan Insurance Corporation of Washington, D. C., an instrumentality of the United States Government.

Two types of accounts are offered—savings accounts on which dividends are credited twice yearly on June 30 and December 31, and investment accounts on which dividends are paid by check at the same dividend dates. Dividend rates are identical on the two types.

Dividends are declared in June and December and are based on the earnings of the Association. Our current rate is 2% per annum. We always pay the highest rate commensurate with safety and good business practice.

Funds placed here on or before the tenth of any month earn dividends as of the first of that month, a factor which makes it profitable for you to add to your account constantly.

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Joseph G. Rice, President

(Continued from Page 97)

association feels it has secured an able young executive to carry on its heavy program of public and professional activities.

The employment of Mr. Jackson is an expansion of the central office, making it possible to carry the work of the association direct to the county societies and to the various public agencies with which the work of the association is allied.

Members and friends of the association are invited and urged to drop into the association offices at 642 Security Building, Phoenix, to meet Mr. Jackson and talk with him on matters of mutual interest.

NEWS NOTES

NEWS RELEASE

RE: *RESIDENCY TRAINING PROGRAM*

Dr. Harold W. Sterling, Manager of the Veterans Administration Hospital, North Little Rock, Arkansas, announces that the first Residency Training Program in Psychiatry in the State of Arkansas has been formally approved by the American Medical Association and the American Board of Psychiatry and Neurology. The American Medical Association has approved this hospital for 15 residents for a three-year training period, and this action marks another step in the advancement of medical education by the Veterans Administration and in this state. This approval was gained with the close cooperation of Dean H. Clay Chenault of the University of Arkansas School of Medicine, and this Residency Training Program will be conducted in close liaison with the Medical School, utilizing the vast and varied clinical material available in the School of Medicine's out-patient clinic and the University Hospital. In addition to practical experience in Child Guidance and Mental Hygiene Clinics at the University of Arkansas School of Medicine, Residents will also obtain experience in the Mental Hygiene Clinic of the Veterans Administration. Limited opportunities for personal psychoanalysis are available to the residents.

Residents will be accepted for training on July 1 and January 1 of each year with an annual stipend of $3,300 for physicians who served as

(Continued on Page 101)

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S. F. Hartman, M. D.

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William F. Schoffman, M. D.
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Audrey Wilson, M. D.

CLINICAL PATHOLOGY
Hugh Wilson, M. D.

DEPARTMENT OF MEDICAL RESEARCH
Carlos A. Tanturi, M. D.

(Continued from Page 99)

Medical Officers during World War II and an annual stipend of $900 to $1,800, plus subsistence, for others

This Training Program is directed by an Educational Committee composed of the following:

Dr. Harold W. Sterling, Manager, VA Hospital, North Little Rock, Arkansas, *Chairman.*

Dr. H. Clay Chenault, Vice-President for the University of Arkansas, School of Medicine, *Member.*

Dr. Crawford N. Baganz, Director of Professional Education, VA Hospital, North Little Rock, Arkansas, *Member.*

Dr. B. B. Wells, Dean, University of Arkansas School of Medicine, Little Rock, Arkansas, *Member.*

Dr. Rudolf N. Bollmeier, Consultant in Psychiatry, VA Hospital, North Little Rock, Arkansas, *Member.*

Dr. E. F. Gildea, Professor of Neuro-Psychiatry, Washington University School of Medicine, St. Louis, Mo., *Ex-Officio Member.*

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The Southwestern Meeting

The Southwestern Medical Association meeting held in Phoenix November 6, 7, and 8, 1947 received most favorable comment from those who attended the convention. In many respects it was outstanding. The attendance was the largest recorded at any previous meeting. The guest speakers were authorities in their respective fields and discussed topics which were carefully selected for their largest appeal in interest and timeliness.

To most of his listeners Dr. H. L. Bockus sounded the first note of conservatism on vagotomy. He emphasized that judgment on the value of that operation be withheld until time has permitted proper evaluation, and that enough vagotomies have been done thus far to yield ample cases for study. In his other talks Dr. Bockus reviewed the present knowledge in the diagnosis of pancreatitis and carcinoma of the colon. Dr. Ferguson participated in presenting the surgical aspects of pancreatitis and colonic malignancy. Dr. Bernard J. Alpers brought many everyday problems of neurology in a concise, practical manner. Dr. Ignacio Chavez presented considerable original work done at the Cardiologic Institute in Mexico City. Dr. Max M. Strumia summarized a tremendous volume of information on the most recent developments in clinical pathology. Dr. Emil Gogen brought to the meeting the most recent thoughts on streptomycin. The opthalmologists had three days of intensive postgraduate work from Dr. Edmund B. Spaeth.

Some thought may be given to the success of future meetings. While many factors are involved in attracting the most competent and desirable speakers, it is believed that increased attendance will aid in maintaining the quality of the programs. The panel discussion feature and question and answer periods are becoming increasingly popular at the regional meeting. Future programs might substitute these for some of the formal or didactic presentations with benefit.

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THURSDAY, FEBRUARY 19, 1948

Dr. T. A. Hartgraves, *Chairman*

1:00 P.M. "Differential Diagnosis of Foot Pain"—
Dr. William H. Bickel

1:40 P.M. "Treatment of Diarrhea in Infants with Streptomycin and Oral Amigen"—
Dr. Elvira Goettsch

2:20 P.M. "Differential Diagnosis and Treatment of Adult Tumors of the Kidney and Ureter"—
Dr. Vincent J. O'Conor

INTERMISSION

3:00 P.M. - 9:10 P.M.

3:10 P.M. "Carcinoma of the Colon and Rectum"—
Dr. Henry G. Williams

3:50 P.M. "Renal and Nonrenal (Extrarenal) Uremias"'—
Dr. Francis D. Murphy

4:30 P.M. "Roentgenologic Aspects of Gastro-Intestinal Disease"—
Dr. Lester W. Paul

FRIDAY, FEBRUARY 19, 1948

Dr. Leslie B. Smith, *Chairman*

9:30 A.M. "Certain Conditions Which Interfere with Growth. Sec. I. Certain Congenital Anomalies of the Genito-Urinary and Intestinal Tracts"
Dr. Elvira Goettsch

10:10 A.M. "Ophthalmic Plastic Procedures"
Dr. Oscar W. Thoeny

10:50 A.M. - 11:00

INTERMISSION

11:00 A.M. "Conservative Surgical Treatment of Hydronephrosis and Nephroptosis"—
Dr. Vincent J. O'Conor

11:40 A.M. "Backache"—
Dr. William H. Bickel

Dr. Merriwether L. Day, *Chairman*

2:00 P.M. "Intracerebral Calcification"—
Dr. John A. Eisenbeiss

2:40 P.M. "Hypertensive Heart Disease and Their Management"—
Dr. Francis D. Murphy

3:20 P.M. - 3:30 P.M.

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INTERMISSION

3:30 P.M. "The Management of Diseases of the Thyroid, Including Some of Their Newer Developments"—
Dr. Frank H. Lahey

4:10 P.M. "Diagnostic X-rays"—
Dr. Lester Paul

SATURDAY, FEBRUARY 21, 1948

Dr. David E. Brinkerhoff, *Chairman*

10:00 A.M. "Acute Disorders of the Heart: Their Diagnosis and Treatment"
Dr. Francis D. Murphy

10:40 A.M. "Small Bowel Tumors"—
Dr. Hugh Wilson

11:20 A.M. - 11:30 A.M.

INTERMISSION

11:30 A.M. "Roentgen Examination in Chronic Joint Disease"—
Dr. Lester W. Paul

Dr. William F. Schoffman, *Chairman*

2:00 P.M. "Certain Conditions Which Interfere with Growth: Section II. Recognition and Treatment of Neurologic and Deficiency States"—
Dr. Elvira Goettsch

2:40 P.M. "Bone and Root Resorption"—
Dr. Norton J. Wood

3:20 P.M. - 3:30 P.M.

INTERMISSION

3:30 P.M. "Treatment of Complications of Fractures"—
Dr. William H. Bickel

4:10 P.M. "Modern Attitude of Treatment of Carcinoma of Prostate Gland"—
Dr. Vincent J. O'Conor

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ANNUAL MEETING

ARIZONA STATE MEDICAL ASSOCIATION

Meeting Places . . . . MAY 19 - 21 (inclusive) 1948
PHOENIX, ARIZONA

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Scientific Sessions . . . .

Speakers for the Scientific Sessions will include Guest Speakers of national prominence in their respective fields, and local authors on the local aspects of medicine and surgery.

Guest Speakers . . . .

JEROME W. CONN, M. D.—Associate Professor of Medicine, University of Michigan College of Medicine.

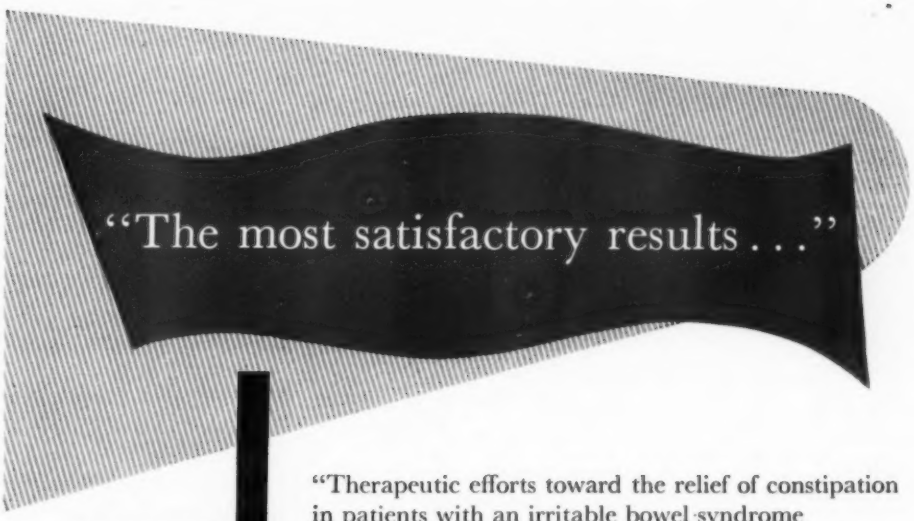
J. DEWEY BISGARD, M. D.—Professor of Surgery, University of Nebraska College of Medicine.

SPEAKER ON ORTHOPEDIC SURGERY. To be selected and announced in a later issue of the Journal. The National Foundation of Infantile Paralysis, Inc. is supplying this speaker.

Each guest will present two and possibly three, papers during the session. Their subjects will be announced in the March issue of the Journal.

Local Speakers. . . .

The following county societies will supply the local papers for the scientific sessions: Coconino, Gila, Greenlee, Maricopa, Mohave, Navajo, Pima, Pinal, and Santa Cruz. The program of speakers will soon be completed and will be published with the full program in March.



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*Dolkart, R. E.; Dentler, M., and Barrow, L. L.: The Effect of Various Types of Therapy in the Management of the Irritable Bowel Syndrome, Illinois M. J. 90:287 (Nov.) 1946.

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LOVELACE FOUNDATION FOR MEDICAL EDUCATION AND RESEARCH

Albuquerque, N. M. Establishment in Albuquerque of a million-dollar philanthropic foundation for the advancement of medical science, similar to the famed Mayo Clinic of Rochester, Minn., was announced today by Dr. William R. Lovelace, founder of Lovelace Clinic here and consulting surgeon for the Atchison, Topeka & Santa Fe Hospital.

Known as the Lovelace Foundation for Medical Education and Research, the organization will have as assets the entire $1,000,000 property of Lovelace Clinic, a group of practicing physicians well known in the Southwest. Floyd B. Odlum, president of the Atlas Corp. of New York, is chairman of the board of trustees.

Operating at the outset from earnings of the doctors in excess of operating expenses, the Foundation eventually expects to construct a new building in Albuquerque to house the Clinic's expanded activities. With a staff of 22 doctors and more than 20,000 patients a year, the Clinic is the largest in New Mexico and one of the largest in the Southwest. It will function as a voluntary association of salaried physicians under a board of governors and will own no property.

A basic function of the Foundation will be fellowship awards enabling young doctors to take post-graduate training at the Clinic for recognition as qualified specialists. It is hoped to conduct this training through affiliation with an approved medical school.

On Monday, September first, Miss Helen E. Watkins took up her duties as Executive Secretary of the Arizona Anti-Tuberculosis Association, succeeding T. C. Cuvellier, who is retiring after twenty-seven years of service to the Association. Mr. Cuvellier will remain in Phoenix for the rest of the year assisting Miss Watkins in her new work.

Miss Watkins, a graduate of Cornell University, comes to Arizona from her native state of New York, where for more than twenty years she has worked with Local Tuberculosis Associations in New York and State Tuberculosis Associations in various capacities. Most recently she has been Director of Recruiting, Training and Placement of Personnel for the New York State Committee on Tuberculosis and Public Health of the State Charities Aid Association.

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Challenged by the many problems which cause Arizona to have such a high tuberculosis death rate—123.1 as against 30.8 in New York State—Miss Watkins accepted the invitation of the Arizona Anti-Tuberculosis Association to become its Executive Secretary, the fourth since the Association was founded in October, 1917. The rapid growth of the State of Arizona makes an expanding program of health protection and service for our citizens of utmost importance. The close cooperation of the State and County Health Departments and the Tuberculosis Association on such a program should assure a progressively better health status for all.

PRELIMINARY ANNOUNCEMENT OF POSTGRADUATE COURSES FOR QUALIFIED PHYSICIANS

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1948

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February 9 through 13

HEMATOLOGY AND BLOOD DISORDERS—
February 16 through 20

INTERNAL MEDICINE AND GENERAL SURGERY—
June 21 through 25

CTYOLOGICAL DIAGNOSIS OF CANCER BY SMEAR TECHNIQUE—
June 21 through July 2

PEDIATRICS—
June 28 through July 2

OPHTHALMOLOGY—
September 6 through 10

GENERAL MEDICINE—Evening lectures, 2 hours every Monday, 12 weeks
September through December to be announced

PSYCHIATRY AND NEUROLOGY—
Full time course, 12 weeks
September through December to be announced

Fees for these courses will be announced in the detailed programs which will be sent upon request to

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All the courses listed above are available to veterans under the provisions of the G. I. Bill of Rights, upon presentation of Letter of Eligibility & Entitlement.

To be announced: A five-day

COURSE IN DISEASES OF THE CHEST
American College of Chest Physicians

Technical Information Office
Washington, D. C.

ARMY DOCTORS AND DENTISTS TO GET $100 A MONTH

Major General Raymond W. Bliss, Surgeon General of the Army, announced recently that effective September 1 an additional $100 a month will be paid to all Regular Army Medical and Dental Corps officers as well as other officers serving voluntarily on extended active duty in these Corps.

General Bliss emphasized that this addition to the incomes of medical and dental officers is regarded by the War Department "not as a pay

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increase but as an equalization measure designed to bring the incomes of Medical and Dental Corps officers more nearly in line with those of civilian doctors and dentists."

General Bliss explained that "the additional compensation will also aid in reimbursing the medical and dental officers for the costs of their professional education and for their loss of earnings while in medical or dental school."

The Army will also follow a new policy of commissioning selected doctors and dentists in the Regular Army in grades as high as full colonel depending upon their age and professional qualifications. In the past, medical and dental officers entering the Regular Army have been initially commissioned only as first lieutenants. Wartime officers have been integrated into the Regular Army in grades through that of major. The measure authorizing appointment of Regular Army Medical and Dental Corps officers in advanced grade also provides for such officers to be credited, for purposes of promotion, with the minimum number of years of service "now or hereafter required for promotion of officers of the Medical and Dental Corps to the grade in which appointed."

The Surgeon General explained that these important changes in the Army's medical program have been made possible by legislation passed Congress on July 26 and signed by President Truman on August 5. This measure is in the form of an amendment to the Pay Readjustment Act of 1942.

General Bliss said the $100 increase in compensation for Army medical and dental officers will benefit not only Regular Army but also Reserve, National Guard and Army of the United States officers. Former students of the Army Specialized Training Program who are required to serve on extended active duty are eligible for this increase in compensation when they apply for and are accepted into the Regular Army. Under study at present is the length of time which these Army Specialized Training Program-trained officers must serve on active duty before becomnig eligible to apply for the regular establishment. This policy will be announced when formulated.

The enabling legislation limits the duration of these benefits to 30 years of active service.

The extra $100 monthly compensation will be

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paid not only to officers who are on extended active duty as of September 1, the effective date of the legislation, but to all eligible Medical and Dental Corps officers who are commissioned in the Regular Army, or volunteer for extended active duty within the next five years.

The Surgeon General stated that the enactment of this, and other legislation including the "Officer Personnel Act of 1947," which established an accelerated promotion schedule, will enable the Army Medical Department to offer much greater advantages than it has in the past to doctors and dentists seeking careers in the governmental service.

ARMY VENEREAL DISEASE RATE HITS NEW LOW SINCE V-J DAY

The Army's venereal disease rate at home and abroad has reached a post-war low, the War Department announced recently.

Stringent regulations outlined last January by Secretary of War Robert P. Patterson were considered by the Army to have brought about the sharp drop in venereal disease. Since Mr.

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Patterson's instructions to all commanders were written, the Army-wide venereal disease rate has fallen 23 per cent. The latest figures available, for May, 1947, show a 30 per cent decrease from the postwar high in the summer of 1946.

In his letter, Mr. Patterson ordered cooperation with civilian authorities in reducing "the reservoir of infection in the adjacent community." This cooperation, he said, must be accompanied by control over sale of liquor to troops and by tightening of discipline within the various commands. He also outlined programs for chaplains, special service officers and provost marshals to follow in curbing venereal disease. Surgeons were ordered to emphasize the moral factors and the role of continence and individual responsibility in their programs of sex hygiene and to recommend further control measures where necessary.

Individuals who became infected were to be restricted to their posts for periods up to 90 days when necessary as a public health procedure, Mr. Patterson added, and commanders were authorized to restrict off-post passes in the case

(Continued on Page 115)

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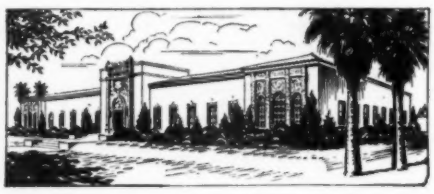

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(Continued from Page 113)

of "irresponsible individuals who repeatedly expose themselves to the risk of venereal disease." Passes, Mr. Patterson emphasized, are a privilege to be awarded for good conduct.

The present venereal disease incidence rate in Europe is 23 per cent below the July, 1946 high; in the Pacific 50 per cent below the April, 1946 peak.

Exercising overall supervision over Army venereal disease control in connection with Mr. Patterson's instructions is the War Department Venereal Disease Control Council, made up of ranking members of the War Department General and Special staffs. The council meets periodically to survey venereal disease conditions and to develop further measures for control.

Book Reviews

LABORATORY MANUEL OF MICROBOLOGY FCR NURSES: by Elizabeth S. Gill, B.S., R.N. Instructor in Nursing, Department of Nursing, College of Physicians and Surgeons, Columbia University, New York: and James T. Culbertson, Ph.D. Professor of Bacteriology and Parasitology, University of Arkansas School of Medicine, Little Rock, Arkansas: formerly Assistant Professor of Bacteriology, College of Physicians and Surgeons, Columbia University, New York. G. P. Putnam's Sons. Price: $1.50.

This is a manuel of 116 pages designed to give the student nurse a basic knowledge of microbology, which is an important aspect of preventive medicine. First, she is taught proper methods of handling nonpathogenic microorganisms, then many of the most important pathogenic organisms of man. Among these organisms are the staphylococci, streptococci, yeasts and molds, protozans, helminths, and arthropods. It is believed these observations befit the nurse to care for patients more intelligently. This manuel seems very complete in its scope.

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